

A11100 988826

NAT'L INST OF STANDARDS & TECH R.I.C.



A11100988826

/NBS monograph
QC100 .U556 V70.V5:1966 C.1 NBS-PUB-C 19

NBS MONOGRAPH **70**—VOLUME V

MICROWAVE SPECTRAL TABLES

Spectral Line Listing



U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

UNITED STATES DEPARTMENT OF COMMERCE

C. R. Smith, *Secretary*

NATIONAL BUREAU OF STANDARDS • A. V. Astin, *Director*

MICROWAVE SPECTRAL TABLES

Volume V. Spectral Line Listing

Marian S. Cord, Matthew S. Lojko, and Jean D. Petersen

Institute for Basic Standards, National Bureau of Standards, Boulder, Colorado



National Bureau of Standards Monograph 70 — Volume V

Issued June 1968

SEP 4 1968

151378

QC100

U556

Microwave Spectral Tables

This five-volume NBS Monograph presents a comprehensive compilation of microwave spectra including measured frequencies, assigned molecular species, assigned quantum numbers, and molecular constants determined from these data. The volumes are available by purchase from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Orders from foreign countries should include an additional one-fourth of the price of the publication to cover the postage.

Titles of the volumes

- I. Diatomic Molecules, \$2.00
- II. Line Strengths of Asymmetric Rotors, \$3.00
- III. Polyatomic Molecules With Internal Rotation (In press)
- IV. Polyatomic Molecules Without Internal Rotation (In press)
- V. Spectral Line Listing, \$4.75

Library of Congress Catalog Card Number: 63-62235

Foreword

The present volume of the Bureau of Standards Spectral Tables will be welcomed by microwave spectroscopists and those who are interested in applying microwave spectroscopy to analytical and other practical purposes. The great accuracy with which microwave lines can be measured, the broad range of frequencies which can be covered, and the sharpness of microwave lines makes this field of spectroscopy in many ways comparable to optical atomic spectroscopy. We need much more practical experience in the utilization of this technique for analytical purposes; but it certainly seems that the accurate measurement of a very few spectral lines should serve to identify with very great certainty the presence of a compound whose lines have been tabulated. However, without tables such as these it was impractical to make the literature search required to find out what substance was causing a given set of frequencies. Now this should be a very easy matter. I certainly look forward to the wide utilization of these tables not only by those who have already been working in this field, but by new workers who will now find it much more convenient to utilize this tool to help solve their own identification and characterization problems.

Naturally no set of tables of this kind can be complete, either with respect to the substances covered or the spectral lines of any given substance, so the fact that an observed line is not listed in these tables is not usually meaningful. However, if the spectrum of a given substance has been partly mapped and listed herein, its presence in a mixture (if its proportion is high enough) should be readily detected if enough of the observed lines are searched for in the present listing. When a line has been tentatively identified, one can then turn to Vols. I, III or IV of this series and look for other known strong lines of the substance to use as corroboration.

E. BRIGHT WILSON, Harvard University.

Contents

	Page
Foreword.....	III
1. Introduction.....	V
2. Spectral line table.....	1
3. Index	528

Microwave Spectral Tables

Spectral Line Listing

Marian S. Cord, Matthew S. Lojko, and Jean D. Petersen

This volume is a listing of the spectral lines reported in Volumes I, III, and IV of the Microwave Spectral Tables. These lines are listed according to ascending magnitude of frequency and should provide a ready reference.

Key words: Microwave spectra, molecular spectra, spectral lines, rotational quantum numbers, diatomic molecules, polyatomic molecules, hyperfine.

Introduction

Volume V of Monograph 70 is a listing of the spectral lines reported in Volumes I, III, and IV of the Microwave Spectral Tables. These lines have been automatically sorted and are listed according to ascending magnitude of frequency. For each spectral line the following data are given in order: the formula for the molecular isotopic species; the number of the volume of this series in which the line was originally tabulated (1, 3, or 4); the identification number used in that volume for ready reference (in Volume I no identification numbers were used); rotational quantum number, given in the general form $J', K'_{-1}, K'_{+1} \leftarrow J, K_{-1}, K_{+1}$ (primes denoting upper state); the vibrational state (ground, excited, or blank, if unknown); the hyperfine quantum numbers; the frequency, and its accuracy (if given in the article from which the line was reported). Volume II contains no spectral lines.

While the material for this volume was prepared as part of the reviewing for the previous ones, most credit for the presentation of the data is due to the effort expended on the programing which was required to accomplish the tremendous job of sorting and tabulating. The authors would like to acknowledge help given in this regard by Mrs. Judith Stephenson and Miss Carol Nielsen.



Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ I ¹²⁷	4- 481	1, 1← 1, 1	Ground		5/2		3/2	292.5	.04
HC ¹² HO ¹⁶	4- 381	8, 3, 5← 8, 3, 6	Ground					301.10	.01
HC ¹² HO ¹⁶	4- 381	3, 2, 1← 3, 2, 2	Ground					355.586	.005
C ¹² H ₃ I ¹²⁷	4- 481	2, 2← 2, 2	Ground		7/2		9/2	375.0	.3
C ¹² H ₃ I ¹²⁷	4- 481	3, 3← 3, 3	Ground		9/2		11/2	444.76	.10
HC ¹² N ¹⁴	4- 291	1← 1	Excited		1		1	448.967	.010
HC ¹² N ¹⁴	4- 291	1← 1	Excited		2		2	448.967	.010
C ¹² H ₃ I ¹²⁷	4- 481	4, 4← 4, 4	Ground		11/2		13/2	481.05	.10
HDO ¹⁶	4-1712	5, 4, 1← 5, 4, 2	Ground	5	11/2	5	9/2	486.266	.002
HDO ¹⁶	4-1712	5, 4, 1← 5, 4, 2	Ground	5	11/2	4	9/2	486.450	.002
HDO ¹⁶	4-1712	5, 4, 1← 5, 4, 2	Ground	5	11/2	6	13/2	486.487	.002
HDO ¹⁶	4-1712	5, 4, 1← 5, 4, 2	Ground					486.528	.002
HDO ¹⁶	4-1712	5, 4, 1← 5, 4, 2	Ground	5	11/2	6	13/2	486.569	.002
HDO ¹⁶	4-1712	5, 4, 1← 5, 4, 2	Ground	5	11/2	4	9/2	486.606	.002
C ¹² F ₃ I ¹²⁷	4- 231	3, 3← 3, 3	Ground		9/2		11/2	500.4	.4
C ¹² H ₃ I ¹²⁷	4- 481	5, 5← 5, 5	Ground		13/2		15/2	503.05	.15
C ¹² H ₃ I ¹²⁷	4- 481	6, 6← 6, 6	Ground		15/2		17/2	517.3	.4
HC ¹² HO ¹⁶	4- 381	9, 3, 6← 9, 3, 7	Ground					601.07	.005
HC ¹² DO ¹⁶	4- 385	3, 2, 1← 3, 2, 2	Ground					644.893	.005
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	3	5/2	2	3/2	824.475	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	4	9/2	4	7/2	824.507	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	3	5/2	4	7/2	824.524	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	3	7/2	3	5/2	824.548	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	3	7/2	4	9/2	824.568	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	2	5/2	4	7/2	824.604	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground					824.670	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	2	5/2	4	7/2	824.741	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	3	7/2	4	9/2	824.773	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	3	7/2	3	5/2	824.790	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	3	5/2	4	7/2	824.813	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	4	9/2	4	7/2	824.834	.002
HDO ¹⁶	4-1712	3, 3, 0← 3, 3, 1	Ground	3	5/2	2	3/2	824.863	.002
HC ¹² HO ¹⁶	4- 381	4, 2, 2← 4, 2, 3	Ground					1 065.85	.02
HC ¹² N ¹⁴	4- 291	2← 2	Excited		2		2	1 346.677	.005
HC ¹² N ¹⁴	4- 291	2← 2	Excited		1		1	1 346.796	.005
HC ¹² N ¹⁴	4- 291	2← 2	Excited		3		3	1 346.796	.005
N ¹⁴ D ₃	4-1775	5, 3← 5, 3	Ground					1 507.50	
N ¹⁴ D ₃	4-1775	5, 3← 5, 3	Ground					1 509.22	
N ¹⁴ D ₃	4-1775	9, 7← 9, 7	Ground					1 509.65	
N ¹⁴ D ₃	4-1775	3, 1← 3, 1	Ground					1 537.81	
N ¹⁴ D ₃	4-1775	11, 9← 11, 9	Ground					1 540.09	
N ¹⁴ D ₃	4-1775	4, 3← 4, 3	Ground					1 557.545	
N ¹⁴ D ₃	4-1775	4, 3← 4, 3	Ground					1 557.702	
N ¹⁴ D ₃	4-1775	4, 3← 4, 3	Ground					1 558.178	
N ¹⁴ D ₃	4-1775	4, 3← 4, 3	Ground					1 558.61	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F'_1	F'	F_1	F		
$N^{14}D_3$	4-1775	4, 3 $\leftarrow$ 4, 3	Ground					1 558.664	
$N^{14}D_3$	4-1775	4, 3 $\leftarrow$ 4, 3	Ground					1 558.805	
$N^{14}D_3$	4-1775	3, 2 $\leftarrow$ 3, 2	Ground					1 560.78	
$N^{14}D_3$	4-1775	5, 4 $\leftarrow$ 5, 4	Ground					1 561.15	
$N^{14}D_3$	4-1775	12,10 $\leftarrow$ 12,10	Ground					1 563.09	
$N^{14}D_3$	4-1775	2, 1 $\leftarrow$ 2, 1	Ground					1 568.34	
$N^{14}D_3$	4-1775	6, 5 $\leftarrow$ 6, 5	Ground					1 569.05	
$N^{14}D_3$	4-1775	7, 6 $\leftarrow$ 7, 6	Ground					1 582.22	
$N^{14}D_3$	4-1775	1, 1 $\leftarrow$ 1, 1	Ground					1 587.451	
$N^{14}D_3$	4-1775	1, 1 $\leftarrow$ 1, 1	Ground					1 588.388	
$N^{14}D_3$	4-1775	1, 1 $\leftarrow$ 1, 1	Ground					1 588.987	
$N^{14}D_3$	4-1775	2, 2 $\leftarrow$ 2, 2	Ground					1 589.645	
$N^{14}D_3$	4-1775	2, 2 $\leftarrow$ 2, 2	Ground					1 590.402	
$N^{14}D_3$	4-1775	2, 2 $\leftarrow$ 2, 2	Ground					1 591.687	
$N^{14}D_3$	4-1775	2, 2 $\leftarrow$ 2, 2	Ground					1 593.017	
$N^{14}D_3$	4-1775	2, 2 $\leftarrow$ 2, 2	Ground					1 593.755	
$N^{14}D_3$	4-1775	3, 3 $\leftarrow$ 3, 3	Ground					1 597.395	
$N^{14}D_3$	4-1775	3, 3 $\leftarrow$ 3, 3	Ground					1 598.007	
$N^{14}D_3$	4-1775	3, 3 $\leftarrow$ 3, 3	Ground					1 599.64	
$N^{14}D_3$	4-1775	3, 3 $\leftarrow$ 3, 3	Ground					1 599.699	
$N^{14}D_3$	4-1775	8, 7 $\leftarrow$ 8, 7	Ground					1 600.58	
$N^{14}D_3$	4-1775	3, 3 $\leftarrow$ 3, 3	Ground					1 601.369	
$N^{14}D_3$	4-1775	3, 3 $\leftarrow$ 3, 3	Ground					1 601.987	
$N^{14}D_3$	4-1775	4, 4 $\leftarrow$ 4, 4	Ground					1 610.550	
$N^{14}D_3$	4-1775	4, 4 $\leftarrow$ 4, 4	Ground					1 611.060	
$N^{14}D_3$	4-1775	4, 4 $\leftarrow$ 4, 4	Ground					1 613.000	
$N^{14}D_3$	4-1775	5, 5 $\leftarrow$ 5, 5	Ground					1 631.82	.05
$N^{14}D_3$	4-1775	6, 6 $\leftarrow$ 6, 6	Ground					1 656.18	.05
HO^{16}	1-	3/2 $\leftarrow$ 3/2	Ground	1			1	1 665.46	.10
HO^{16}	1-	3/2 $\leftarrow$ 3/2	Ground	2			2	1 667.34	.03
$N^{14}D_3$	4-1775	7, 7 $\leftarrow$ 7, 7	Ground					1 686.46	.05
$N^{14}D_3$	4-1775	8, 8 $\leftarrow$ 8, 8	Ground					1 722.85	.05
$N^{14}D_3$	4-1775	9, 9 $\leftarrow$ 9, 9	Ground					1 765.80	.05
$N^{14}D_3$	4-1775	10,10 $\leftarrow$ 10,10	Ground					1 815.37	.05
$N^{14}D_3$	4-1775	11,11 $\leftarrow$ 11,11	Ground					1 872.43	.05
$N^{14}D_3$	4-1775	12,12 $\leftarrow$ 12,12	Ground					1 937.31	.05
$N^{14}D_3$	4-1775	13,13 $\leftarrow$ 13,13	Ground					2 010.57	.05
$N^{14}D_3$	4-1775	14,14 $\leftarrow$ 14,14	Ground					2 092.32	.05
$N^{14}D_3$	4-1775	Not Reported	Ground					2 094.	
$N^{14}D_3$	4-1775	15,15 $\leftarrow$ 15,15	Ground					2 183.	
$N^{14}D_3$	4-1775	Not Reported	Ground					2 186.	
$Cl^{35}C^{12}N^{14}$	4- 171	17 $\leftarrow$ 17	Excited					2 283.698	.010
$Cl^{35}C^{12}N^{14}$	4- 171	17 $\leftarrow$ 17	Excited					2 283.906	.010
$N^{14}D_3$	4-1775	16,16 $\leftarrow$ 16,16	Ground					2 285.	
$N^{14}D_3$	4-1775	Not Reported	Ground					2 290.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HDO ¹⁶	4-1712	6, 4, 2← 6, 4, 3	Ground					2 394.56	.05
N ¹⁴ D ₃	4-1775	17,17←17,17	Ground					2 403.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 408.	
N ¹⁴ H ₃ .	4-1771	Not Reported	Ground					2 431.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 480.	
N ¹⁴ D ₃	4-1775	Not Reported	Ground					2 533.	
N ¹⁴ D ₃	4-1775	18,18←18,18	Ground					2 540.	
Cl ³⁵ C ¹² N ¹⁴	4- 171	18←18	Excited					2 552.224	.010
Cl ³⁵ C ¹² N ¹⁴	4- 171	18←18	Excited					2 552.448	.010
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 599.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 614.	
S ^b P ^b Cl ₃ ^b	4-1536	Not Reported						2 629.	
S ^b P ^b Cl ₃ ^b	4-1536	Not Reported						2 647.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 652.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 668.	
S ^b P ^b Cl ₃ ^b	4-1536	Not Reported						2 689.	
HC ¹² N ¹⁴	4- 291	3← 3	Excited	3		2		2 691.757	.008
HC ¹² N ¹⁴	4- 291	3← 3	Excited	3		4		2 692.071	.006
HC ¹² N ¹⁴	4- 291	3← 3	Excited	3		3		2 693.250	.009
HC ¹² N ¹⁴	4- 291	3← 3	Excited	2		2		2 693.395	.006
HC ¹² N ¹⁴	4- 291	3← 3	Excited	4		4		2 693.395	.006
HC ¹² N ¹⁴	4- 291	3← 3	Excited	4		3		2 694.582	.009
HC ¹² N ¹⁴	4- 291	3← 3	Excited	2		3		2 694.954	.009
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 699.	
S ^b P ^b Cl ₃ ^b	4-1536	Not Reported						2 710.	
C ¹² F ¹⁹ I ¹²⁷	4- 231	1, 0← 0, 0	Ground	5/2		5/2		2 715.1	.3
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 746.	
N ¹⁵ O ₂ ¹⁶	4-1802	21, 2,20←22, 1,21	Ground					2 746.51	.30
S ^b P ^b Cl ₃ ^b	4-1536	Not Reported						2 760.	
N ¹⁵ O ₂ ¹⁶	4-1802	21, 2,20←22, 1,21	Ground					2 767.35	.30
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						2 781.95	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						2 782.62	.5
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 786.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 800.	
S ^b P ^b Cl ₃ ^b	4-1536	Not Reported						2 805.	
Cl ³⁵ C ¹² N ¹⁴	4- 171	19←19	Excited					2 835.622	.010
Cl ³⁵ C ¹² N ¹⁴	4- 171	19←19	Excited					2 835.829	.010
DC ¹² DO ¹⁶	4- 384	8, 3, 5← 8, 3, 6	Ground					2 850.62	.03
N ¹⁵ O ₂ ¹⁶	4-1802	21, 2,20←22, 1,21	Ground					2 861.82	.20
HDO ¹⁶	4-1712	5, 0, 5←4, 2, 2	Ground					2 887.4	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 900.	
N ¹⁵ O ₂ ¹⁶	4-1802	21, 2,20←22, 1,21	Ground					2 902.11	.30
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 939.	
HC ¹² DO ¹⁶	4- 385	16, 4,12←16, 4,13	Ground					2 946.67	.03
HDO ¹⁶	4-1712	12, 6, 6←12, 6, 7	Ground					2 961.	1.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency M	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ H ₃	4-1771	Not Reported	Ground					2 978.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					3 010.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						3 015.17	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						3 019.90	.5
HDO ¹⁶	4-1712	9, 5, 4← 9, 5, 5	Ground					3 044.71	.10
DC ¹² DO ¹⁶	4- 384	13, 4, 9←13, 4,10	Ground					3 079.48	.03
C ¹² F ₃ ¹⁹ F ¹²⁷	4- 231	1, 0← 0, 0	Ground		7/2		5/2	3 162.9	.25
N ¹⁴ H ₃	4-1771	Not Reported	Ground					3 187.	
HC ¹² HO ¹⁶	4- 381	12, 3, 9←12, 3,10	Ground					3 225.58	.01
N ¹⁴ H ₃	4-1771	Not Reported	Ground					3 261.	
HC ¹² DO ¹⁶	4- 385	10, 3, 7←10, 3, 8	Ground					3 283.09	.03
HC ¹² DO ¹⁶	4- 385	23, 5,18←23, 5,19	Ground					3 330.66	.04
C ¹² F ₃ ¹⁹ F ¹²⁷	4- 231	1, 0← 0, 0	Ground		3/2		5/2	3 362.9	.4
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						3 389.74	.5
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ H	3- 661	3, , ← 2, ,	Ground					3 462.2	
N ¹⁴ D ₂ H	4-1774	Not Reported	Ground					3 470.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						3 483.67	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						3 505.76	.5
HC ¹² HO ¹⁶	4- 381	20, 4,16←20, 4,17	Ground					3 518.85	.5
N ¹⁵ O ₂ ¹⁶	4-1802	7, 1, 7← 8, 0, 8	Ground					3 660.75	.24
DC ¹² DO ¹⁶	4- 384	4, 2, 2← 4, 2, 3	Ground					3 687.28	.04
DC ¹² N ¹⁴	4- 292	4← 4	Excited					3 722.98	.02
N ¹⁵ O ₂ ¹⁶	4-1802	7, 1, 7← 8, 0, 8	Ground					3 759.69	.01
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					3 773.5	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						3 797.95	.5
N ¹⁴ D ₂ H	4-1774	Not Reported	Ground					3 865.	
N ¹⁵ O ₂ ¹⁶	4-1802	7, 1, 7← 8, 0, 8	Ground					3 900.57	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						3 921.96	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 076.65	.01
N ¹⁵ O ₂ ¹⁶	4-1802	7, 1, 7← 8, 0, 8	Ground					4 082.16	.15
N ¹⁴ D ₂ H	4-1774	Not Reported	Ground					4 086.	
Cl ³⁵ C ¹² N ¹⁴	4- 171	23←23	Excited					4 117.869	.020
Cl ³⁵ C ¹² N ¹⁴	4- 171	23←23	Excited					4 118.067	.020
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 129.01	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 129.84	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 142.15	.5
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 161.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 199.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 216.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 219.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 241.	
N ¹⁵ O ₂ ¹⁶	4-1802	7, 1, 7← 8, 0, 8	Ground					4 243.94	.02
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 282.	
N ¹⁵ O ₂ ¹⁶	4-1802	7, 1, 7← 8, 0, 8	Ground					4 321.59	.06
HC ¹² HO ¹⁸	4- 383	1, 1, 0← 1, 1, 1	Ground					4 388.85	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F' ₁	F' ₂	F ₁	F		
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 407.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 410.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 480.55	.5
HC ¹² N ¹⁴	4- 291	4 ← 4	Excited		4		3	4 486.762	.013
HC ¹² N ¹⁴	4- 291	4 ← 4	Excited		4		5	4 487.000	.006
HC ¹² N ¹⁴	4- 291	4 ← 4	Excited		4		4	4 488.381	.020
HC ¹² N ¹⁴	4- 291	4 ← 4	Excited		3		3	4 488.522	.020
HC ¹² N ¹⁴	4- 291	4 ← 4	Excited		5		5	4 488.522	.020
HC ¹² DO ¹⁶	4- 385	5, 2, 3 ← 5, 2, 4	Ground					4 489.08	.03
DC ¹² DO ¹⁶	4- 384	19, 5, 14 ← 19, 5, 15	Ground					4 508.39	.04
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 511.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 543.00	.5
HC ¹³ HO ¹⁶	4- 382	1, 1, 0 ← 1, 1, 1	Ground					4 593.26	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	8, 3, ← 9, 2,	Ground					4 660.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 660.42	.5
HC ¹² DO ¹⁶	4- 385	17, 4, 13 ← 17, 4, 14	Ground					4 713.90	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 721.	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						4 764.0	
K ³⁹ Br ⁸¹	1-	1 ← 0	Excited	5/2	3	3/2	3	4 793.140	
K ³⁹ Br ⁸¹	1-	1 ← 0	Excited	1/2	2	3/2	3	4 794.062	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	3/2	2	3/2	3	4 806.153	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	3/2	3	3/2	3	4 808.247	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	5/2	2	3/2	3	4 808.990	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	5/2	4	3/2	3	4 809.129	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	5/2	3	3/2	3	4 811.835	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	1/2	2	3/2	3	4 812.622	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	3/2	2	3/2	3	4 815.635	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	3/2	1	3/2	0	4 815.884	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	3/2	3	3/2	3	4 817.056	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	5/2	2	3/2	3	4 817.909	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	5/2	4	3/2	3	4 817.992	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	5/2	1	3/2	0	4 818.143	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	5/2	3	3/2	3	4 819.815	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	1/2	1	3/2	0	4 820.130	
K ³⁹ Br ⁸¹	1-	1 ← 0	Ground	1/2	2	3/2	3	4 820.613	
HC ¹² HO ¹⁶	4- 381	1, 1, 0 ← 1, 1, 1	Ground					4 829.73	.01
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	3/2	2	3/2	3	4 830.463	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	3/2	3	3/2	3	4 832.362	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	5/2	2	3/2	3	4 833.143	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	5/2	4	3/2	3	4 833.270	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	5/2	3	3/2	3	4 835.743	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Excited	1/2	2	3/2	3	4 836.530	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 850.	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Ground	3/2	2	3/2	3	4 854.856	
K ³⁹ Br ⁷⁹	1-	1 ← 0	Ground	3/2	3	3/2	3	4 856.588	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
K ³⁹ Br ⁷⁹	1-	1← 0	Ground	5/2	2	3/2	3	4 857.383	
K ³⁹ Br ⁷⁹	1-	1← 0	Ground	5/2	4	3/2	3	4 857.502	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 857.86	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	19, 6, ←20, 5,	Ground					4 858.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 859.	
K ³⁹ Br ⁷⁹	1-	1← 0	Ground	5/2	3	3/2	3	4 859.740	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 859.88	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	19, 6, ←20, 5,	Ground					4 860.	
N ¹⁴ D ₂ H	4-1774	6, 1, 6← 6, 0, 6	Ground					4 860.20	.05
K ³⁹ Br ⁷⁹	1-	1← 0	Ground	1/2	2	3/2	3	4 860.523	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						4 879.4	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 907.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 915.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 938.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 948.	
HC ¹² HO ¹⁶	4- 381	6, 2, 4← 6, 2, 5	Ground					4 954.76	.01
N ¹⁴ H ₃	4-1771	Not Reported	Ground					4 956.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						4 963.00	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						5 006.82	.5
HC ¹² DO ¹⁶	4- 385	24, 5, 19←24, 5, 20	Ground					5 018.25	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 025.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 030.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 122.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 124.	
HC ¹² HO ¹⁶	4- 381	13, 3, 10←13, 3, 11	Ground					5 136.58	.01
HC ¹² HO ¹⁶	4- 381	21, 4, 17←21, 4, 18	Ground					5 138.57	.5
HC ¹³ DO ¹⁶	4- 386	1, 1, 0← 1, 1, 1	Ground					5 156.19	.10
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	7/2	2	5/2	1	5 189.587	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	7/2	5	5/2	4	5 189.616	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	7/2	3	5/2	4	5 189.656	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	7/2	4	5/2	4	5 189.681	.002
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 192.	
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	3/2	3	5/2	4	5 194.306	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	3/2	1	5/2	1	5 194.306	.002
N ¹⁴ D ₂ H	4-1774	7, 1, 7← 7, 0, 7	Ground					5 197.56	.05
Rb ⁸⁷ Cl ³⁵	1-	1← 0	Ground	3/2	3	3/2	3	5 201.032	.002
Rb ⁸⁷ Cl ³⁵	1-	1← 0	Ground	3/2	1	3/2	0	5 201.032	.002
Rb ⁸⁷ Cl ³⁵	1-	1← 0	Ground	5/2	2	3/2	3	5 207.389	.002
Rb ⁸⁷ Cl ³⁵	1-	1← 0	Ground	1/2	2	3/2	3	5 212.474	.002
Rb ⁸⁷ Cl ³⁵	1-	1← 0	Ground	1/2	1	3/2	0	5 212.474	.002
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 213.	
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	7/2	5	5/2	4	5 216.440	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	7/2	2	5/2	1	5 216.630	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	7/2	3	5/2	4	5 216.712	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	7/2	4	5/2	4	5 216.752	.002

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	3/2	3	5/2	4	5 221.395	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	3	2	5/2	1	5 221.395	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Excited	3/2	2	5/2	1	5 221.421	.002
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 230.	
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	5/2	3	5/2	4	5 232.671	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	5/2	2	5/2	1	5 232.750	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	5/2	4	5/2	4	5 232.809	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	5/2	1	5/2	1	5 232.889	.002
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 236.	
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	7/2	2	5/2	1	5 243.745	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	7/2	5	5/2	4	5 243.788	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	7/2	3	5/2	4	5 243.855	.022
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	7/2	4	5/2	4	5 243.905	.002
Rb ⁸⁷ Cl ³⁵	1-	1← 0	Ground	5/2	4	3/2	3	5 247.332	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	3/2	3	5/2	4	5 248.566	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	3/2	1	5/2	1	5 248.566	.002
Rb ⁸⁵ Cl ³⁵	1-	1← 0	Ground	3/2	2	5/2	1	5 248.596	.002
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						5 284.82	.01
HC ¹² DO ¹⁶	4- 385	1, 1, 0← 1, 1, 1	Ground					5 346.64	.03
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 364.	
N ¹⁴ D ₂ H	4-1774	8, 1, 8← 8, 0, 8	Ground					5 364.03	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 368.	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						5 386.0	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 392.	
N ¹⁴ D ₂ H	4-1774	7, 1, 7← 7, 0, 7	Ground					5 392.07	.05
N ¹⁴ D ₂ H	4-1774	8, 1, 8← 8, 0, 8	Ground					5 414.15	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 415.	
DC ¹² DO ¹⁶	4- 384	14, 4,10←14, 4,11	Ground					5 461.54	
N ¹⁴ D ₂ H	4-1774	9, 1, 9← 9, 0, 9	Ground					5 494.98	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 495.	
N ¹⁴ D ₂ H	4-1774	9, 1, 9← 9, 0, 9	Ground					5 507.75	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	1, 0, 1← 0, 0, 0	Ground		5/2		5/2	5 542.08	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						5 546.75	.5
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 549.	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						5 562.53	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						5 568.98	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 574.	
N ¹⁴ D ₂ H	4-1774	6, 1, 6← 6, 0, 6	Ground					5 581.08	.05
DC ¹² N ¹⁴	4- 292	5← 5	Excited					5 583.85	.02
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						5 602.57	.5
N ¹⁴ D ₂ H	4-1774	10, 1,10←10, 0,10	Ground					5 631.97	.05
N ¹⁴ D ₂ H	4-1774	10, 1,10←10, 0,10	Ground					5 635.18	.05
DC ¹² DO ¹⁶	4- 384	9, 3, 6← 9, 3, 7	Ground					5 636.98	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						5 679.92	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						5 680.84	.5

Spectral Line Table

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₁	F' ₁	F		
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 689.	
HC ¹² DO ¹⁶	4- 385	11, 3, 8←11, 3, 9	Ground					5 702.6	
HDO ¹⁶	4-1712	4, 3, 1← 4, 3, 2	Ground					5 702.78	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					5 726.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						5 766.68	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	8, 3, ← 9, 2,	Ground					5 767.	
N ¹⁴ D ₂ H	4-1774	11, 1,11←11, 0,11	Ground					5 786.44	.05
N ¹⁴ D ₂ H	4-1774	11, 1,11←11, 0,11	Ground					5 787.16	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	1, 0, 1← 0, 0, 0	Ground		7/2		5/2	5 852.44	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						5 876.61	.5
N ¹⁴ D ₂ H	4-1774	12, 1,12←12, 0,12	Ground					5 962.30	.20
I ¹²⁷ C ¹³ N ¹⁴	4- 512	1← 0	Ground		5/2		5/2	5 974.43	.5
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	1, 0, 1← 0, 0, 0	Ground		3/2		5/2	5 988.1	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						5 992.	
I ¹²⁷ C ¹² N ¹⁴	4- 511	1← 0	Excited		5/2		5/2	6 051.36	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	1← 0	Ground		5/2		5/2	6 070.66	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	1← 0	Ground		5/2		5/2	6 071.61	.5
DC ¹² DO ¹⁶	4- 384	1, 1, 0← 1, 1, 1	Ground					6 096.10	.02
N ¹⁴ D ₂ H	4-1774	Not Reported	Ground					6 105.	
I ¹²⁷ C ¹² N ¹⁴	4- 511	1← 0	Excited		5/2		5/2	6 106.71	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						6 144.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 153.64	.5
N ¹⁴ D ₂ H	4-1774	13, 1,13←13, 0,13	Ground					6 161.86	.20
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 172.20	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 246.42	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 269.81	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	13, 3, ←12, 4,	Ground					6 270.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 349.51	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 350.09	.5
N ¹⁴ D ₂ H	4-1774	14, 1,14←14, 0,14	Ground					6 387.23	.20
C ¹² H ₃ N ¹⁴ H ₂	3- 261	8, 3, ← 9, 2,	Ground					6 450.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 450.42	.5
N ¹⁴ D ₂ H	4-1774	5, 1, 5← 5, 0, 5	Ground					6 461.09	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					6 463.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 469.43	.5
I ¹²⁷ C ¹³ N ¹⁴	4- 512	1← 0	Ground		7/2		5/2	6 480.72	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 487.99	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						6 498.3	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	19, 6, ←20, 5,	Ground					6 500.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 500.42	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	1← 0	Excited		7/2		5/2	6 559.63	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						6 575.71	
I ¹²⁷ C ¹² N ¹⁴	4- 511	1← 0	Ground		7/2		5/2	6 577.06	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	1← 0	Ground		7/2		5/2	6 577.95	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						6 588.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
N ¹⁴ H ₃	4-1771	Not Reported	Ground					6 598.	
I ¹²⁷ C ¹² N ¹⁴	4- 511	1 ← 0	Excited	7/2		5/2		6 610.24	.5
N ¹⁴ D ₂ H	4-1774	Not Reported	Ground					6 641.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 655.04	.01
I ¹²⁷ C ¹³ N ¹⁴	4- 512	1 ← 0	Ground	3/2		5/2		6 703.25	.5
HC ¹² N ¹⁴	4- 291	5 ← 5	Excited	5		5		6 731.793	.011
HC ¹² N ¹⁴	4- 291	5 ← 5	Excited	4		4		6 731.925	.009
HC ¹² N ¹⁴	4- 291	5 ← 5	Excited	6		6		6 731.925	.009
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 748.80	.5
HC ¹³ HO ¹⁶	4- 382	14, 3, 11 ← 14, 3, 12	Ground					6 752.31	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						6 759.91	
I ¹²⁷ C ¹² N ¹⁴	4- 511	1 ← 0	Excited	3/2		5/2		6 782.16	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	1 ← 0	Ground	3/2		5/2		6 799.79	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	1 ← 0	Excited	3/2		5/2		6 830.47	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 837.58	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	8, 3, ← 9, 2,	Ground					6 867.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						6 867.17	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					6 894.81	.04
N ¹⁴ D ₂ H	4-1774	Not Reported	Ground					6 922.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					6 939.82	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground					6 975.	
F ₃ ¹⁹ B ^b ·N ^b (C ¹² H ₃) ₃	3- 801	2, ← 1,						6 990.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 000.71	.1
DC ¹² N ¹⁴	4- 292	3 ← 3	Excited					7 050.92	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground					7 104.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 115.14	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 213.43	.1
N ¹⁴ D ₂ H	4-1774	Not Reported	Ground					7 238.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 253.64	.1
N ¹⁴ H ₃	4-1771	15, 6 ← 15, 6	Ground					7 285.80	.05
HC ¹² DO ¹⁶	4- 385	18, 4, 14 ← 18, 4, 15	Ground					7 322.35	
HC ¹² HO ¹⁶	4- 381	22, 4, 18 ← 22, 4, 19	Ground					7 362.60	
N ¹⁴ H ₃	4-1771	14, 4 ← 14, 4	Ground					7 370.05	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						7 382.93	.01
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						7 383.78	.01
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	7, 1, 6 ← 7, 1, 7	Ground					7 384.82	.5
N ¹⁴ D ₂ H	4-1774	Not Reported	Ground					7 388.	
DC ¹² N ¹⁵	4- 296	6 ← 6	Excited					7 391.80	.1
K ³⁹ Cl ³⁷	1-	1 ← 0	Excited	1/2 1	3/2 0			7 426.754	
K ³⁹ Cl ³⁷	1-	1 ← 0	Excited	1/2 2	3/2 3			7 426.754	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 2, 9 ← 10, 3, 8	Ground		19/2	17/2		7 438.2	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						7 444.9	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8 ← 12, 2, 11	Ground		27/2	25/2		7 449.0	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 2, 9 ← 10, 3, 8	Ground		21/2	19/2		7 457.1	
K ⁴¹ Cl ³⁵	1-	1 ← 0	Excited	1/2 2	3/2 3			7 468.107	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
K ⁴¹ Cl ³⁵	1-	1← 0	Excited	1/2	1	3/2	0	7 468.107	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8←12, 2,11	Ground		25/2		23/2	7 469.2	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	3/2	1	3/2	0	7 469.370	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	3/2	2	3/2	3	7 469.370	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	3/2	3	3/2	3	7 469.370	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	3/2	0	3/2	0	7 469.370	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	5/2	2	3/2	3	7 470.776	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	5/2	3	3/2	3	7 470.776	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	5/2	4	3/2	3	7 470.776	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	5/2	1	3/2	0	7 470.776	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	1/2	2	3/2	3	7 471.917	
K ³⁹ Cl ³⁷	1-	1← 0	Ground	1/2	1	3/2	0	7 471.917	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 2, 9←10, 3, 8	Ground		23/2		21/2	7 476.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8←12, 2,11	Ground		23/2		21/2	7 483.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8←12, 2,11	Ground		21/2		19/2	7 493.8	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 2, 9←10, 3, 8	Ground		25/2		23/2	7 494.9	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	3/2	0	3/2	0	7 510.555	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	3/2	3	3/2	3	7 510.555	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	3/2	2	3/2	3	7 510.555	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	3/2	1	3/2	0	7 510.555	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	5/2	1	3/2	0	7 512.280	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	5/2	2	3/2	3	7 512.280	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	5/2	4	3/2	3	7 512.280	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	5/2	3	3/2	3	7 512.280	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	1/2	2	3/2	3	7 513.659	
K ⁴¹ Cl ³⁵	1-	1← 0	Ground	1/2	1	3/2	0	7 513.659	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						7 515.56	.5
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	2	3/2	3	7 547.073	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	1	3/2	0	7 547.073	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	3	3/2	3	7 547.073	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	3	3/2	3	7 547.136	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	2	3/2	3	7 547.136	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	1	3/2	0	7 547.136	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	1/2	2	3/2	3	7 549.569	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	1/2	1	3/2	0	7 549.569	
N ¹⁴ H ₂ D	4-1773	5, 1, 5← 5, 0, 5	Ground					7 562.06	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 2, 9←10, 3, 8	Ground					7 569.1	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					7 587.	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	3	3/2	3	7 593.830	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	2	3/2	3	7 593.830	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	1	3/2	0	7 593.830	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	2	3/2	3	7 593.868	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	1	3/2	0	7 593.868	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	3/2	3	3/2	3	7 593.868	
K ³⁹ Cl ³⁵	1-	1← 0	Excited	1/2	1	3/2	0	7 596.347	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	1/2	2	3/2	3	7 596.347	
N ¹⁴ H ₃	4-1771	16, 8 $\leftarrow$ 16, 8	Ground					7 617.90	.15
N ¹⁴ O ₂ ¹⁶ F ¹⁹	4-1581	5, 4, 1 $\leftarrow$ 5, 4, 2	Ground					7 623.1	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 2, 9 $\leftarrow$ 10, 3, 8	Ground					7 627.3	
DC ¹² N ¹⁴	4- 292	4 $\leftarrow$ 4	Excited					7 634.45	.1
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	3/2	3	3/2	3	7 640.783	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	3/2	2	3/2	3	7 640.783	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	3/2	1	3/2	0	7 640.783	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	3/2	3	3/2	3	7 640.795	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	3/2	1	3/2	0	7 640.795	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	3/2	2	3/2	3	7 640.795	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	5/2	2	3/2	3	7 642.200	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	5/2	3	3/2	3	7 642.200	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	5/2	4	3/2	3	7 642.200	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	5/2	1	3/2	0	7 642.200	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	1/2	1	3/2	0	7 643.316	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Excited	1/2	2	3/2	3	7 643.316	
DC ¹³ N ¹⁴	4- 294	6 $\leftarrow$ 6	Excited					7 652.70	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 2, 9 $\leftarrow$ 10, 3, 8	Ground		23/2		21/2	7 660.0	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 2, 9 $\leftarrow$ 10, 3, 8	Ground		21/2		19/2	7 672.3	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					7 680.	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	3/2	2	3/2	3	7 687.942	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	3/2	1	3/2	0	7 687.942	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	3/2	3	3/2	3	7 687.942	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	3/2	0	3/2	0	7 687.942	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	5/2	4	3/2	3	7 689.356	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	5/2	1	3/2	0	7 689.356	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	5/2	3	3/2	3	7 689.356	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	5/2	2	3/2	3	7 689.356	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	1/2	1	3/2	0	7 690.487	
K ³⁹ Cl ³⁵	1-	1 $\leftarrow$ 0	Ground	1/2	2	3/2	3	7 690.487	
Br ⁸¹ F ₃ ¹⁹	4- 82	1, 1, 0 $\leftarrow$ 1, 0, 1	Ground		3/2		5/2	7 691.42	
Br ⁷⁹ F ₃ ¹⁹	4- 81	1, 1, 0 $\leftarrow$ 1, 0, 1	Ground		3/2		5/2	7 691.42	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 718.11	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 727.74	.04
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 757.18	.1
HO ¹⁶	1-	3/2, 2 $\leftarrow$ 3/2, 2	Ground		1		1	7 760.36	.15
Br ⁸¹ F ₃ ¹⁹	4- 82	1, 1, 0 $\leftarrow$ 1, 0, 1	Ground		3/2		1/2	7 792.44	
Br ⁸¹ F ₃ ¹⁹	4- 82	1, 1, 0 $\leftarrow$ 1, 0, 1	Ground		5/2		3/2	7 795.73	
N ¹⁴ D ₂ H	4-1774	6, 2, 5 $\leftarrow$ 6, 1, 5	Ground					7 801.38	.05
Br ⁷⁹ F ₃ ¹⁹	4- 81	1, 1, 0 $\leftarrow$ 1, 0, 1	Ground		3/2		1/2	7 812.84	
C ¹² H ₃ O ¹⁶ H	3- 211	12, , $\leftarrow$ 11, ,	Ground					7 816.	
DC ¹² N ¹⁴	4- 292	6 $\leftarrow$ 6	Excited					7 816.20	.02
Br ⁷⁹ F ₃ ¹⁹	4- 81	1, 1, 0 $\leftarrow$ 1, 0, 1	Ground		5/2		3/2	7 816.22	
HO ¹⁶	1-	3/2, 2 $\leftarrow$ 3/2, 2	Ground		2		2	7 819.92	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹² HO ¹⁶	4- 381	31, 5,26←31, 5,27	Ground					7 833.20	
DN ¹⁴ O ₃ ¹⁶	3- 32	5,4, 1← 5, 4, 2	Ground					7 833.96	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8←12, 2,11	Ground					7 840.4	
C ¹² H ₃ S ³² H	3- 221	5, 1, 4← 5, 1, 5	Ground					7 846.0	.1
HC ¹² HO ¹⁶	4- 381	14, 3,11←14, 3,12	Ground					7 892.03	
N ¹⁴ H ₃	4-1771	13, 2←13, 2	Ground					7 894.37	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 896.89	.1
HDC ¹² :C ¹² O ¹⁶	4- 713	21, 2,19←21, 2,20	Ground					7 901.08	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					7 911.49	.04
Br ⁸¹ F ₃ ¹⁹	4- 82	1, 1, 0← 1, 0, 1	Ground		5/2		5/2	7 922.30	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	6, 1, 5← 6, 1, 6	Ground					7 925.18	
HDS ³²	4-1727	6, 4, 2← 6, 4, 3	Ground					7 936.74	.05
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	1, 0, 1← 0, 0, 0	Ground		5/2		3/2	7 960.00	
Br ⁷⁹ F ₃ ¹⁹	4- 81	1, 1, 0← 1, 0, 1	Ground		5/2		5/2	7 967.96	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						7 977.76	
Br ⁸¹ F ₃ ¹⁹	4- 82	1, 1, 0← 1, 0, 1	Ground		1/2		3/2	7 981.36	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	1, 0, 1← 0, 0, 0	Ground		5/2		3/2	8 001.82	
HC ¹³ HO ¹⁶	4- 382	7, 2, 5← 7, 2, 6	Ground					8 012.56	.5
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Excited	1/2		3/2		8 028.04	.1
Br ⁷⁹ F ₃ ¹⁹	4- 81	1, 1, 0← 1, 0, 1	Ground		1/2		3/2	8 039.00	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1← 0	Excited	1/2		3/2		8 047.08	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Ground	1/2		3/2		8 051.48	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	1, 0, 1← 0, 0, 0	Ground		3/2		3/2	8 058.90	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					8 060.	1.
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1← 0	Ground	1/2		3/2		8 070.45	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					8 074.	1.
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ H	3- 661	7, , ← 6, ,	Ground					8 079.1	
F ¹⁹ HC ¹² O ¹⁸	4- 274	4, 0, 4← 3, 1, 3	Ground					8 085.9	.2
(C ¹³ H ₃)(C ¹² H ₃)O ¹⁶	3- 594	2, 0, 2← 1, 1, 1	Ground					8 086.2	.2
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Excited	1		3/2		8 090.25	.1
Tl ²⁰⁵ I ¹²⁷	1-	5← 4	Excited		15/2		13/2	8 097.22	0.05
HN ¹⁴ O ₃ ¹⁶	3- 31	7, 6, 1← 7, 6, 2	Ground					8 097.58	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1← 0	Excited	1/2		3/2		8 109.78	.1
DO ¹⁶	1-	5/2, 3← 5/2, 3	Ground		3/2		3/2	8 110.20	.10
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					8 114.	1.
Tl ²⁰⁵ I ¹²⁷	1-	5← 4	Excited		15/2		13/2	8 117.06	0.03
DO ¹⁶	1-	5/2, 3← 5/2, 3	Ground		5/2		5/2	8 117.69	.10
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	1, 0, 1← 0, 0, 0	Ground		3/2		3/2	8 119.60	
DO ¹⁶	1-	5/2, 3← 5/2, 3	Ground		7/2		7/2	8 127.64	.15
Tl ²⁰⁵ I ¹²⁷	1-	5← 4	Ground		9/2		7/2	8 131.45	0.04
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					8 131.59	.1
Tl ²⁰⁵ I ¹²⁷	1-	5← 4	Ground		11/2		9/2	8 133.10	0.03
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						8 134.63	
HO ¹⁶	1-	5/2, 3← 5/2, 3	Ground		2		2	8 135.51	.15
Tl ²⁰⁵ I ¹²⁷	1-	5← 4	Ground		15/2		13/2	8 136.96	0.02

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Tl ²⁰⁵ I ¹²⁷	1-	5← 4	Ground	13/2		11/2		8 138.66	0.03
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	2, 0, 2← 1, 1, 1	Ground					8 142.5	.2
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Excited	5/2		3/2		8 142.89	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	1, 0, 1← 0, 0, 0	Ground					8 145.90	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						8 147.09	
N ¹⁴ H ₃	4-1771	15, 7←15, 7	Ground					8 152.68	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Ground	5/2	5/2	3/2	5/2	8 164.96	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					8 165.	5.
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Ground	5/2	7/2	3/2	5/2	8 165.68	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1← 0	Excited	5/2		3/2		8 183.87	.1
HO ¹⁶	1-	5/2, 3← 5/2, 3	Ground		3		3	8 188.94	.10
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	2, 0, 2← 1, 1, 1	Ground					8 191.0	
C ¹² H ₃ O ¹⁶ H	3- 211	33, 2, ←33, 1,	Ground					8 198.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					8 201.65	.04
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1← 0	Ground	5/2	5/2	3/2	5/2	8 206.18	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1← 0	Ground	5/2	7/2	3/2	5/2	8 206.92	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1← 0	Ground	5/2	3/2	3/2	5/2	8 207.39	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8←12, 2,11	Ground		21/2		19/2	8 214.3	
HDS ⁸²	4-1758	11, 6, 6←11, 6, 5	Ground					8 215.8	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					8 233.22	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8←12, 2,11	Ground		23/2		21/2	8 235.3	
HDS ⁸⁰	4-1757	11, 6, 6←11, 6, 5	Ground					8 240.6	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 0, 2← 1, 1, 1	Ground					8 243.0	.5
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1← 0	Excited	5/2		3/2		8 245.29	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	2, 0, 2← 1, 1, 1	Ground					8 250.4	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8←12, 2,11	Ground		25/2		23/2	8 253.7	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	8, 4, 4← 8, 3, 5	Ground					8 259.2	
HDS ⁷⁸	4-1756	11, 6, 6←11, 6, 5	Ground					8 266.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	11, 3, 8←12, 2,11	Ground		27/2		25/2	8 268.6	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					8 268.99	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						8 270.73	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						8 273.57	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					8 278.	
HDS ⁷⁷	4-1755	11, 6, 6←11, 6, 5	Ground					8 280.0	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					8 283.	
N ¹⁴ D ₂ H	4-1774	3, 1, 3← 3, 0, 3	Ground					8 283.92	.05
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Excited	3/2		3/2		8 286.87	.1
HDS ⁷⁶	4-1759	11, 6, 6←11, 6, 5	Ground					8 293.6	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	8, 4, 4← 8, 3, 5	Ground					8 297.0	
O ¹⁶ F ₂ ¹⁹	4-1611	5, 2, 4← 6, 1, 5	Ground					8 299.51	.10
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	9, 3, 7← 9, 3, 6	Ground					8 300.64	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Ground	3/2	5/2	3/2	3/2	8 308.27	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Ground	3/2	3/2	3/2	3/2	8 308.89	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Ground	3/2	1/2	3/2	3/2	8 309.67	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	1← 0	Excited	3/2		3/2		8 346.07	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1 $\leftarrow$ 0	Excited	3/2		3/2		8 356.48	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1 $\leftarrow$ 0	Ground	3/2	5/2	3/2	3/2	8 377.95	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1 $\leftarrow$ 0	Ground	3/2	3/2	3/2	3/2	8 378.58	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1 $\leftarrow$ 0	Ground	3/2	1/2	3/2	3/2	8 379.38	.1
C ¹² H ₃ O ¹⁶ H	3- 211	2, , $\leftarrow$ 1, ,	Ground					8 380.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	13, 3, $\leftarrow$ 12, 4,	Ground					8 411.94	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	1 $\leftarrow$ 0	Excited	3/2		3/2		8 416.30	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						8 478.7	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	2, 1, 2 $\leftarrow$ 2, 0, 2	Ground					8 481.94	.03
C ¹² *H ₂ C ¹³ H ₂ C ¹² *Cl ₂ ³⁵	4-1068	8, 5, 3 $\leftarrow$ 8, 4, 4	Ground					8 485.0	
C ¹² *H ₂ C ¹³ H ₂ C ¹² *Cl ₂ ³⁵	4-1068	8, 4, 4 $\leftarrow$ 8, 3, 5	Ground					8 487.4	
DC ¹² DO ¹⁶	4- 384	5, 2, 3 $\leftarrow$ 5, 2, 4	Ground					8 519.10	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	5, 1, 4 $\leftarrow$ 5, 1, 5	Ground					8 521.53	
Br ⁸¹ Cl ³⁷	1-	1 $\leftarrow$ 0	Ground	1/2	2	3/2	3	8 525.53	
HC ¹² N ¹⁴	4- 291	3 $\leftarrow$ 3	Excited					8 557.50	.1
Br ⁷⁹ Cl ³⁷	1-	1 $\leftarrow$ 0	Ground	1/2	2	3/2	3	8 559.58	
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	6, 2, 4 $\leftarrow$ 6, 2, 5	Ground					8 571.07	.35
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	6, 2, 4 $\leftarrow$ 6, 2, 5	Ground					8 577.35	.35
HDO ¹⁶	4-1712	7, 4, 3 $\leftarrow$ 7, 4, 4	Ground					8 577.7	.1
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	4, 2, 3 $\leftarrow$ 4, 1, 4	Ground					8 605.0	
O ¹⁶ F ₂ ¹⁹	4-1611	12, 2, 10 $\leftarrow$ 13, 1, 13	Ground					8 610.91	.10
N ^b O ₂ Cl ^b	4-1463	Not Reported						8 621.50	
N ^b O ₂ Cl ^b	4-1463	Not Reported						8 622.20	
t-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1067	8, 5, 3 $\leftarrow$ 8, 4, 4	Ground					8 625.4	
C ₈ H ₁₃ Br ⁸¹	4-1332	6, $\leftarrow$ 5,	Excited					8 627.5	
N ¹⁴ O ₂ Cl ³⁷	4-1462	1, 0, 1 $\leftarrow$ 0, 0, 0	Ground		3/2		3/2	8 644.60	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	32, 5, 27 $\leftarrow$ 32, 5, 28						8 662.	
N ¹⁴ O ₂ Cl ³⁷	4-1462	1, 0, 1 $\leftarrow$ 0, 0, 0	Ground		5/2		3/2	8 663.20	
Br ⁸¹ Cl ³⁷	1-	1 $\leftarrow$ 0	Ground	5/2	3	3/2	3	8 663.40	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	20, 15, 5 $\leftarrow$ 20, 15, 6	Ground					8 668.27	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	20, 15, 5 $\leftarrow$ 20, 15, 6	Ground					8 669.25	.1
Br ⁸¹ Cl ³⁷	1-	1 $\leftarrow$ 0	Ground	5/2	2	3/2	3	8 671.87	
DO ¹⁶	1-	11/2, 5 $\leftarrow$ 11/2, 5	Ground		13/2		13/2	8 672.36	.10
DO ¹⁶	1-	11/2, 5 $\leftarrow$ 11/2, 5	Ground		11/2		11/2	8 672.36	.10
DO ¹⁶	1-	11/2, 5 $\leftarrow$ 11/2, 5	Ground		9/2		9/2	8 672.36	.10
Br ⁸¹ Cl ³⁷	1-	1 $\leftarrow$ 0	Ground	5/2	4	3/2	3	8 676.37	
N ¹⁴ O ₂ Cl ³⁷	4-1462	1, 0, 1 $\leftarrow$ 0, 0, 0	Ground		1/2		3/2	8 678.10	
Br ⁸¹ Cl ³⁷	1-	1 $\leftarrow$ 0	Ground	5/2	1	3/2	0	8 683.06	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					8 684.29	.04
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	18, 2, 16 $\leftarrow$ 18, 2, 17	Ground					8 687.06	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	6, 2, 5 $\leftarrow$ 6, 2, 4	Ground					8 688.00	.1
C ₈ H ₁₃ Br ⁷⁹	4-1331	6, $\leftarrow$ 5,	Excited					8 716.5	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported	Ground					8 723.11	
Br ⁷⁹ Cl ³⁷	1-	1 $\leftarrow$ 0	Ground	5/2	3	3/2	3	8 725.49	
Br ⁷⁹ Cl ³⁷	1-	1 $\leftarrow$ 0	Ground	5/2	2	3/2	3	8 733.84	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F' ₁	F'	F ₁	F		
Br ⁷⁹ Cl ³⁷	1-	1 ← 0	Ground	5/2	4	3/2	3	8 738.47	
Br ⁷⁹ Cl ³⁷	1-	1 ← 0	Ground	5/2	1	3/2	0	8 745.17	
HDSe ⁸²	4-1758	4, 3, 2 ← 4, 3, 1	Ground					8 756.7	.1
N ¹⁴ H ₃	4-1771	13, 4 ← 13, 4	Ground					8 762.87	.05
N ¹⁴ H ₃	4-1771	14, 6 ← 14, 6	Ground					8 766.96	.05
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	4, 1, 3 ← 4, 0, 4	Ground					8 767.0	
O ¹⁶ F ₂ ¹⁹	4-1611	34, 8.27 ← 35, 7.28	Ground					8 769.86	.10
HDSe ⁸⁰	4-1757	4, 3, 2 ← 4, 3, 1	Ground					8 771.05	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground					8 778.	
O ¹⁶ F ₂ ¹⁹	4-1611	31, 6.25 ← 30, 7.24	Ground					8 779.55	.10
O ¹⁶ F ₂ ¹⁹	4-1611	20, 5.15 ← 21, 4.18	Ground					8 782.91	.10
HDSe ⁷⁸	4-1756	4, 3, 2 ← 4, 3, 1	Ground					8 786.05	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3-1041	4, 0, 4 ← 3, 0, 3	Ground					8 793.	1.5
HDSe ⁷⁷	4-1755	4, 3, 2 ← 4, 3, 1	Ground					8 793.95	.1
HDSe ⁷⁶	4-1759	4, 3, 2 ← 4, 3, 1	Ground					8 801.85	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					8 813.22	.1
Br ⁸¹ F ₃ ¹⁹	4- 82	2, 1, 1 ← 2, 0, 2	Ground		5/2		5/2	8 819.04	
N ¹⁴ H ₃	4-1771	16, 9 ← 16, 9	Ground					8 823.90	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						8 824.0	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ₂ ¹⁶	3- 596	5, 1, 5 ← 4, 2, 2	Ground					8 828.6	.5
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1064	2, 1, 2 ← 1, 0, 1	Ground					8 831.3	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	9, 5, 4 ← 9, 4, 5	Ground					8 836.8	
HDO ¹⁶	4-1712	10, 5, 5 ← 10, 5, 6	Ground					8 836.95	.1
Br ⁸¹ Cl ³⁷	1-	1 ← 0	Ground	3/2	3	3/2	3	8 852.93	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 3, 1 ← 4, 3, 2	Ground					8 855.45	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	5, 4, 1 ← 5, 3, 2	Ground					8 857.4	
Br ⁸¹ Cl ³⁵	1-	1 ← 0	Ground	1/2	2	3/2	3	8 865.66	
N ¹⁴ O ₂ Cl ³⁵	4-1461	1, 0, 1 ← 0, 0, 0	Ground		3/2		3/2	8 876.28	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					8 884.29	.1
HC ¹² HO ¹⁶	4- 381	7, 2, 5 ← 7, 2, 6	Ground					8 884.87	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ₂ ¹⁶	3- 596	Not Reported	Ground					8 890.	5.
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 3, 0 ← 3, 2, 1	Ground					8 892.53	.1
HC ¹² N ¹⁵	4- 295	6 ← 6	Excited					8 897.20	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					8 898.	5.
Br ⁷⁹ Cl ³⁵	1-	1 ← 0	Ground	1/2	2	3/2	3	8 899.50	
N ¹⁴ O ₂ Cl ³⁵	4-1461	1, 0, 1 ← 0, 0, 0	Ground		5/2		3/2	8 899.90	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					8 903.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 4, 5 ← 8, 5, 4	Ground					8 906.22	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 4, 5 ← 8, 5, 4	Ground					8 907.53	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	4, 3, 2 ← 4, 2, 3	Ground					8 909.3	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					8 911.	5.
Br ⁷⁹ F ₃ ¹⁹	4- 81	2, 1, 1 ← 2, 0, 2	Ground		5/2		5/2	8 911.82	
N ¹⁴ O ₂ Cl ³⁵	4-1461	1, 0, 1 ← 0, 0, 0	Ground		1/2		3/2	8 918.70	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					8 922.	
HC ¹² DO ¹⁶	4- 385	6, 2, 4 ← 6, 2, 5	Ground					8 922.59	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
(C ¹² D ₃) ₂ C ¹² H ₃ Si ^b H	3- 879	1, 1, 0← 0, 0, 0	Ground					8 941.09	.1
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					8 950.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					8 950.90	.1
Br ⁷⁹ Cl ³⁷	1-	1← 0	Ground	3/2	3	3/2	3	8 951.38	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					8 955.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	4, 1, 3← 4, 0, 4	Ground					8 955.2	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	5, 5, 0← 5, 4, 1	Ground					8 958.4	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					8 960.	5.
Br ⁷⁹ Cl ³⁷	1-	1← 0	Ground	3/2	2	3/2	3	8 964.19	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	16, 3,13←16, 3,14						8 968.50	
Br ⁸¹ Cl ³⁵	1-	1← 0	Excited	5/2	4	3/2	3	8 972.41	
Bi ²⁰⁹ Cl ₃ ³⁵	4- 71	3, ← 2,	Ground					8 982.	1.
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	1, 1, 0← 1, 0, 1	Ground					8 993.41	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	1, 1, 0← 1, 0, 1	Ground					8 994.12	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	1, 1, 0← 1, 0, 1	Ground					8 994.82	.05
t-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1067	4, 4, 0← 4, 3, 1	Ground					8 995.9	
Br ⁸¹ Cl ³⁵	1-	1← 0	Ground	5/2	3	3/2	3	9 001.44	
N ^b O ₂ Cl ^b	4-1463	Not Reported						9 002.52	
N ^b O ₂ Cl ^b	4-1463	Not Reported						9 003.58	
Br ⁸¹ Cl ³⁵	1-	1← 0	Ground	5/2	2	3/2	3	9 012.97	
C ₆ ¹² H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	4, 2, 3← 3, 2, 2	Ground					9 013.	1.5
N ¹⁴ H ₃	4-1771	Not Reported	Ground					9 014.	
Br ⁸¹ Cl ³⁵	1-	1← 0	Ground	5/2	4	3/2	3	9 018.40	
HC ¹³ N ¹⁴	4- 293	6← 6	Excited					9 018.87	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	9, 5, 4← 9, 4, 5	Ground					9 025.6	
Br ⁸¹ Cl ³⁵	1-	1← 0	Ground	5/2	1	3/2	0	9 026.17	
N ¹⁴ H ₃	4-1771	12, 1←12, 1	Ground					9 032.81	.025
N ¹⁴ H ₃	4-1771	12, 1←12, 1	Ground					9 033.13	.025
Br ⁷⁹ Cl ³⁵	1-	1← 0	Excited	5/2	4	3/2	3	9 034.14	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					9 057.85	.04
Br ⁷⁹ Cl ³⁵	1-	1← 0	Ground	5/2	3	3/2	3	9 063.77	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1064	7, 3, 4← 7, 2, 5	Ground					9 064.3	
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	1, , ← 0, ,	Ground					9 074.72	.03
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	1, , ← 0, ,	Ground					9 074.72	.03
Br ⁷⁹ Cl ³⁵	1-	1← 0	Ground	5/2	2	3/2	3	9 074.91	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	8, 6, 2← 8, 5, 3	Ground					9 075.4	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					9 079.39	.04
Br ⁷⁹ Cl ³⁵	1-	1← 0	Ground	5/2	4	3/2	3	9 080.73	
C ₆ ¹² H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	4, 3, 2← 3, 3, 1	Ground					9 085.	2.5
C ₆ ¹² H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	4, 3, 1← 3, 3, 0	Ground					9 085.	2.5
Br ⁷⁹ Cl ³⁵	1-	1← 0	Ground	5/2	1	3/2	0	9 088.61	
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	3, 1, 2← 3, 1, 3	Ground					9 111.32	.05
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 0, 2← 1, 1, 1	Ground					9 119.7	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					9 127.61	.04
HDS ^{e82}	4-1758	2, 2, 1← 2, 2, 0	Ground					9 127.75	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 128.14	.04
HDSe ⁸⁰	4-1757	2, 2, 1← 2, 2, 0	Ground		9 138.55	
HDSe ⁸⁰	4-1757	2, 2, 1← 2, 2, 0	Ground		9 138.55	.1
t-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1067	7, 3, 4← 7, 2, 5	Ground		9 14 0	
HDSe ⁷⁸	4-1756	2, 2, 1← 2, 2, 0	Ground		9 149.65	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground		9 150.	5.
HDSe ⁷⁷	4-1755	2, 2, 1← 2, 2, 0	Ground		9 155.85	.1
HDSe ⁷⁷	4-1755	2, 2, 1← 2, 2, 0	Ground		9 155.85	.1
HDSe ⁷⁶	4-1759	2, 2, 1← 2, 2, 0	Ground		9 161.50	.1
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	8, 3, 6← 8, 2, 6	Ground		9 168.84	.2
Br ⁸¹ F ₃ ¹⁹	4- 82	2, 1, 1← 2, 0, 2	Ground	7/2 7/2	9 173.13	
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	1, 0, 1← 0, 0, 0	Ground		9 174.9	.05
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	1, 0, 1← 0, 0, 0	Ground		9 177.78	.05
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	27, 2,25←27, 2,26	Ground		9 188.20	
Br ⁸¹ Cl ³⁵	1-	1← 0	Ground	3/2 3 3/2 3	9 193.26	
O ₃ ¹⁶	4-1841	20, 3,17←21, 2,20	Ground		9 201.	
Br ⁸¹ Cl ³⁵	1-	1← 0	Ground	3/2 2 3/2 3	9 209.57	
Br ⁷⁹ F ₃ ¹⁹	4- 81	2, 1, 1← 2, 0, 2	Ground	7/2 7/2	9 215.06	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 223.83	.1
O ^b O ^b O ^b	4-1847	Not Reported			9 225.8	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			9 227.5	
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ H	3- 661	8, , ← 7, ,	Ground		9 235.2	
HC ¹² N ¹⁴	4- 291	4← 4	Excited		9 242.20	.1
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	6, 4, 3← 6, 3, 4	Ground		9 242.3	
HN ¹⁴ O ₃ ¹⁶	3- 31	12,10, 2←12,10, 3	Ground		9 245.56	
C ₆ H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	4, 2, 2← 3, 2, 1	Ground		9 251.	10.
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	8, 5, 3← 8, 4, 4	Ground		9 252.1	
DC ¹² DO ¹⁶	4- 384	15, 4,11←15, 4,12	Ground		9 259.88	
N ¹⁴ S ³² F ₃ ¹⁹	4-1661	1, 0← 0, 0	Ground	0 1	9 271.90	
N ¹⁴ H ₃	4-1771	12, 2←12, 2	Ground		9 272.10	.10
N ¹⁴ S ³² F ₃ ¹⁹	4-1661	1, 0← 0, 0	Ground	2 1	9 272.42	
N ¹⁴ S ³² F ₃ ¹⁹	4-1661	1, ← 0,	Ground		9 272.56	
N ¹⁴ S ³² F ₃ ¹⁹	4-1661	1, 0← 0, 0	Ground	1 1	9 272.79	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1064	6, 4, 3← 6, 3, 4	Ground		9 275.7	
N ¹⁴ H ₃	4-1771	15, 8←15, 8	Ground		9 283.65	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 285.77	.1
Br ⁷⁹ Cl ³⁵	1-	1← 0	Ground	3/2 3 3/2 3	9 291.61	
HC ¹² :C ¹² C ¹² DO ¹⁶	4- 921	3, 1, 3← 4, 0, 4	Ground		9 300.33	.02
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	27,20, 7←27,20, 8	Ground		9 307.38	.1
Br ⁷⁹ Cl ³⁵	1-	1← 0	Ground	3/2 2 3/2 3	9 307.96	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	27,20, 7←27,20, 8	Ground		9 308.35	.1
C ¹² H ₃ Ge ^b Cl ³⁵ Cl ₂ ³⁷	3- 104	3, 2, 2← 2, 1, 2			9 315.	15.
a-C ¹² H ₂ DSi ²⁸ HF ₁₂ ¹⁹	3- 204	1, 0, 1← 0, 0, 0	Ground		9 334.73	.2
s-Si ²⁸ HD ₂ C ¹² H:C ¹² H ₂	3- 622	1, 1, 0← 0, 0, 0	Ground		9 354.8	.10
N ^b O ₂ Cl ^b	4-1463	Not Reported			9 368.20	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	1, 0← 0, 0	Excited		9 408.0	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	24, 4,20←24, 4,21			9 410.	
HC ¹² DO ¹⁶	4- 385	12, 3, 9←12, 3,10	Ground		9 412.51	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	1, 0← 0, 0	Ground		9 417.7	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	1, 0← 0, 0	Ground		9 418.0	
HC ¹² N ¹⁴	4- 291	6← 6	Excited		9 423.32	.02
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	3, 2, 2← 3, 1, 2	Ground		9 423.92	.2
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	1, 0← 0, 0	Ground		9 424.30	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	7, 3, 4← 7, 2, 5	Ground		9 425.7	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	1, 0← 0, 0	Excited		9 427.3	
s-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 203	1, 0, 1← 0, 0, 0	Ground		9 437.10	.2
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	1, 0← 0, 0	Excited		9 441.0	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	8, 4, 4← 8, 3, 5	Ground		9 447.6	
HN ¹⁴ O ₃ ¹⁶	3- 31	3, 3, 0← 3, 2, 1	Ground		9 447.97	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	5, 5, 1← 5, 4, 2	Ground		9 448.0	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 452.63	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 453.06	.1
C ¹² H ₃ Ge ^b Cl ₂ ³⁵ Cl ³⁷	3- 105	3, 2, 2← 2, 1, 2			9 455.	15.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 459.96	.1
HDC ¹² ;C ¹² O ¹⁶	4- 713	22, 2,20←22, 2,21	Ground		9 462.69	
N ¹⁴ H ₃	4-1771	13, 5←13, 5	Ground		9 476.06	.10
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	7, 3, 4← 7, 2, 5	Ground		9 488.8	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	7, 3, 4← 7, 2, 5	Ground		9 489.9	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	8, 1, 7← 8, 1, 8	Ground		9 490.48	.5
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	8, 1, 7← 8, 1, 8	Ground		9 491.29	.5
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	8, 1, 7← 8, 1, 8	Ground		9 493.00	.5
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	8, 1, 7← 8, 1, 8	Ground		9 493.77	.5
a-Si ²⁸ HD ₂ C ¹² H:C ¹² H ₂	3- 623	1, 1, 0← 0, 0, 0	Ground		9 511.02	.10
C ¹³ H ₃ C ¹² HO	3- 476	2, 0, 2← 1, 1, 1	Ground		9 513.06	.2
c-C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵ Cl ³⁷	4-1066	10, 5, 5←10, 4, 6	Ground		9 516.9	
N ¹⁴ D ₂ H	4-1774	4, 1, 4← 4, 0, 4	Ground		9 517.55	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground		9 521.	
O ¹⁶ F ₂ ¹⁹	4-1611	34, 8,26←35, 7,29	Ground		9 533.43	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			9 543.51	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	6, 5, 2← 6, 4, 3	Ground		9 554.8	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			9 555.23	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵ Cl ³⁷	4-1064	10, 5, 5←10, 4, 6	Ground		9 560.8	
DO ¹⁶	1-	7/2, 4← 7/2, 4	Ground	5/2 5/2	9 578.51	.15
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 584.09	.1
DO ¹⁶	1-	7/2, 4← 7/2, 4	Ground	7/2 7/2	9 586.03	.10
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	2, 1, 2← 1, 0, 1	Ground		9 592.8	
C ¹² H ₃ Ge ^b Cl ₃ ³⁵	3- 107	3, ← 2,			9 595.	15.
DO ¹⁶	1-	7/2, 4← 7/2, 4	Ground	9/2 9/2	9 595.26	.10
C ₆ ¹² H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	4, 1, 3← 3, 1, 2	Ground		9 598.	1.5
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	4, 4, 0← 4, 3, 1	Ground		9 598.3	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
N ¹⁴ H ₃	4-1771	Not Reported	Ground		9 636.	
O ^b O ^b O ^b	4-1847	Not Reported			9 641.7	
C ¹² H ₃ C ¹² ₂ *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	23, 7,17←23, 6,17	Ground		9 641.95	.2
C ¹² H ₃ C ¹² ₂ *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	23, 7,17←23, 6,17	Ground		9 643.07	.2
C ¹² H ₃ C ¹² ₂ *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	23, 7,17←23, 6,17	Ground		9 644.25	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	3, 1, 2← 3, 1, 3	Ground		9 647.10	.35
S ³⁴ O ₂ ¹⁶	4-1833	10, 2, 8←11, 1,11	Ground		9 650.63	.02
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	3, 1, 2← 3, 1, 3	Ground		9 653.41	.35
N ¹⁴ H ₃	4-1771	14, 3←14, 3	Ground		9 670.78	.10
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	1, 1, 1← 2, 0, 2	Ground		9 689.15	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			9 689.62	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			9 689.72	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1064	8, 6, 2← 8, 5, 3	Ground		9 689.8	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			9 689.80	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 2, 7← 9, 2, 8			9 696.83	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			9 697.59	
a-Si ²⁸ H ₂ DC ¹² H:C ¹² H ₂	3- 621	1, 1, 0← 0, 0, 0	Ground		9 705.16	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	2, 0, ← 1, 1,	Ground		9 706.10	.1
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	1, 0, 1← 0, 0, 0	Ground	3/2 3/2	9 726.45	.05
Tl ²⁰³ I ¹²⁷	1-	6← 5	Excited		9 734.0	
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	1, 0, 1← 0, 0, 0	Ground	5/2 3/2	9 738.77	.05
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1064	5, 5, 1← 5, 4, 2	Ground		9 743.7	
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	1, 0, 1← 0, 0, 0	Ground	1/2 3/2	9 748.59	.05
Tl ²⁰³ I ¹²⁷	1-	6← 5	Ground	9/2 7/2	9 755.55	0.04
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	6, 2, 4← 6, 2, 5	Ground		9 756.44	.35
Tl ²⁰³ I ¹²⁷	1-	6← 5	Ground	11/2 9/2	9 757.30	0.03
Tl ²⁰³ I ¹²⁷	1-	6← 5	Ground	7/2 5/2	9 758.18	0.03
Tl ²⁰³ I ¹²⁷	1-	6← 5	Ground	13/2 11/2	9 761.27	0.02
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	6, 2, 4← 6, 2, 5	Ground		9 762.83	.35
Tl ²⁰³ I ¹²⁷	1-	6← 5	Ground	17/2 15/2	9 763.27	0.02
Tl ²⁰³ I ¹²⁷	1-	6← 5	Ground	15/2 13/2	9 764.52	0.03
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 779.33	.04
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		9 797.13	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		9 798.95	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		9 799.75	.1
Tl ²⁰³ I ¹²⁷	1-	6← 5	Ground	15/2 13/2	9 801.20	0.05
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1064	6, 5, 2← 6, 4, 3	Ground		9 806.0	
N ¹⁴ H ₃	4-1771	14, 7←14, 7	Ground		9 814.30	.05
O ^b O ^b O ^b	4-1847	Not Reported			9 823.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground		9 829.	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	3, 1, 2← 3, 1, 3			9 831.98	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	2, 1, 2← 1, 0, 1	Ground		9 833.3	
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 853.68	.08
DC ¹² N ¹⁵	4- 296	7← 7	Excited		9 854.15	.1
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 855.60	.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 859.30	.04
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 860.60	.10
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 861.80	.30
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	4, 2, 3← 4, 1, 4	Ground		9 861.9	
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 863.96	.05
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 865.00	.20
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 866.69	.11
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 870.50	.20
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 875.00	.25
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2 7/2	9 876.60	0.15
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2 9/2	9 876.60	0.15
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	2, 1← 1, 1	Ground		9 877.00	.25
s-Si ²⁸ H ₂ DC ¹² H:C ¹² H ₂	3- 619	1, 1, 0← 0, 0, 0	Ground		9 881.05	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	4, 4, 0← 4, 3, 1	Ground		9 899.9	
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2 7/2	9 906.80	0.10
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2 9/2	9 906.80	0.10
DO ¹⁶	1-	11/2, 6←11/2, 6	Ground	9/2 9/2	9 914.39	.10
HDC ¹² :C ¹² O ¹⁶	4- 713	6, 1, 5← 6, 1, 6	Ground		9 919.95	
DO ¹⁶	1-	11/2, 6←11/2, 6	Ground	11/2 11/2	9 921.53	.10
DO ¹⁶	1-	11/2, 6←11/2, 6	Ground	13/2 13/2	9 929.88	.10
C ¹² H ₃ O ¹⁶ H	3- 211	9, 1, ← 8, 2,	Ground		9 936.2	.1
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2 9/2	9 937.15	0.10
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2 7/2	9 937.15	0.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		9 938.95	.04
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	3, 1, 2← 3, 1, 3	Ground		9 939.98	.2
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	3, 1, 2← 3, 1, 3	Ground		9 945.74	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	16,12, 4←16,12, 5	Ground		9 950.12	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	16,12, 4←16,12, 5	Ground		9 950.92	.1
C ¹² H ₃ O ¹⁶ H	3- 211	8, , ← 7, ,	Ground		9 960.	
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	5, 4, 2← 5, 3, 3	Ground		9 964.8	
N ¹⁴ H ₃	4-1771	Not Reported	Ground		9 967.	
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2 9/2	9 967.35	0.08
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2 7/2	9 967.35	0.08
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	4, 2, 3← 4, 1, 4	Ground		9 967.5	
N ¹⁴ O ₂ Cl ³⁵	4-1461	6, 2, 5← 6, 2, 4	Ground	11/2 11/2	9 973.90	
N ¹⁴ O ₂ Cl ³⁵	4-1461	6, 2, 5← 6, 2, 4	Ground	13/2 13/2	9 973.90	
N ¹⁴ O ₂ Cl ³⁵	4-1461	6, 2, 5← 6, 2, 4	Ground	9/2 9/2	9 976.40	
N ¹⁴ O ₂ Cl ³⁵	4-1461	6, 2, 5← 6, 2, 4	Ground	15/2 15/2	9 976.40	
C ¹² H ₃ O ¹⁶ H	3- 211	5, 2, 3← 4, 3, 2	Ground		9 978.6	.1
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2 7/2	9 998.00	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2 9/2	9 998.00	0.03
C ¹² H ₃ O ¹⁶ H	3- 211	4, 3, ← 5, 2,	Ground		10 002.	
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2 7/2	10 028.30	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2 9/2	10 028.30	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	5/2 3/2	10 031.36	0.04

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	7/2	5/2			10 031.36	0.04
O ¹⁶ F ₂ ¹⁹	4-1611	9, 2, 7←10, 1,10	Ground					10 057.72	.10
C ¹² *H ₂ C ¹³ H ₂ C ¹² *Cl ₂ ³⁵	4-1068	10, 6, 4←10, 5, 5	Ground					10 058.20	
C ¹² H ₃ O ¹⁶ H	3- 211	5, 2, 4← 4, 3, 1	Ground					10 058.3	.1
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2	7/2			10 058.68	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2	9/2			10 058.68	0.03
C ¹² *H ₂ C ¹³ H ₂ C ¹² *Cl ₂ ³⁵	4-1068	10, 5, 5←10, 4, 6	Ground					10 060.25	
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	5/2	3/2			10 061.70	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	7/2	5/2			10 061.70	0.03
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .E	3- 702	1, 0, 1← 0, 0, 0						10 062.98	.2
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .A	3- 701	1, 0, 1← 0, 0, 0						10 064.23	.2
D ₂ O ₂ ¹⁶	3- 42	Not Reported						10 068.	3.
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	1, 0, 1← 0, 0, 0	Ground	3/2	3/2			10 072.98	.05
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	1, 0, 1← 0, 0, 0	Ground	5/2	3/2			10 084.92	.05
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2	7/2			10 089.30	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2	9/2			10 089.30	0.03
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	1, 0, 1← 0, 0, 0	Ground					10 089.96	.05
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	1, 0, 1← 0, 0, 0	Ground					10 090.73	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					10 091.	
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	7/2	5/2			10 092.38	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	5/2	3/2			10 092.38	0.03
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	1, 0, 1← 0, 0, 0	Ground	1/2	3/2			10 094.21	.05
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	1, 0, 1← 0, 0, 0	Ground					10 095.99	.05
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	4, 2, 2← 4, 1, 3	Ground					10 099.17	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					10 108.45	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					10 109.61	.1
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	2, 1, 1← 2, 0, 2	Ground					10 112.93	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	2, 1, 1← 2, 0, 2	Ground					10 113.72	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	2, 1, 1← 2, 0, 2	Ground					10 114.53	.05
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	11/2	9/2			10 119.78	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	9/2	7/2			10 119.78	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	7/2	5/2			10 122.81	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Excited	5/2	3/2			10 122.81	0.03
C ¹³ H ₃ C ¹² HO	3- 476	3, 0, 3← 2, 1, 2	Ground					10 146.83	.2
Tl ²⁰³ Br ⁸¹	1-	4← 3	Excited	11/2	9/2			10 147.89	0.04
Tl ²⁰³ Br ⁸¹	1-	4← 3	Excited	9/2	7/2			10 147.89	0.04
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Ground	9/2	7/2			10 150.36	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Ground	11/2	9/2			10 150.36	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Ground	7/2	5/2			10 153.41	0.03
Tl ²⁰⁵ Br ⁸¹	1-	4← 3	Ground	5/2	3/2			10 153.41	0.03
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					10 178.86	.1
Tl ²⁰³ Br ⁸¹	1-	4← 3	Ground	9/2	7/2			10 178.87	0.04
Tl ²⁰³ Br ⁸¹	1-	4← 3	Ground	11/2	9/2			10 178.87	0.04
Tl ²⁰³ Br ⁸¹	1-	4← 3	Ground	7/2	5/2			10 181.86	0.06
Tl ²⁰³ Br ⁸¹	1-	4← 3	Ground	5/2	3/2			10 181.86	0.06

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
DO ¹⁶	1-	9/2, 5← 9/2, 5	Ground	7/2	7/2	10	191.64	.10	
DO ¹⁶	1-	9/2, 5← 9/2, 5	Ground	9/2	9/2	10	199.10	.10	
DC ¹³ N ¹⁴	4- 294	7← 7	Excited				10 201.95	.05	
DO ¹⁶	1-	9/2, 5← 9/2, 5	Ground	11/2	11/2	10	208.14	.10	
C ¹² D ₃ Si ^b HD ₂	3- 331	8, 1, 7← 8, 1, 8					10 208.20	.2	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	11/2	9/2	10	208.93	0.03	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	9/2	7/2	10	208.93	0.03	
D ₂ O ₂ ¹⁶	3- 42	Not Reported					10 209.	3.	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	5/2	3/2	10	212.58	0.04	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	7/2	5/2	10	212.58	0.04	
O ₃ ¹⁶	4-1841	10, 1, 9← 9, 2, 8	Ground				10 226.		
HDS ³²	4-1727	11, 6, 5←11, 6, 6	Ground				10 235.81	.05	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	1, 0, 1← 0, 0, 0	Ground	3/2	3/2	10	238.66	.05	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	11/2	9/2	10	240.21	0.03	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	9/2	7/2	10	240.21	0.03	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground				10 240.48	.04	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	5/2	3/2	10	243.80	0.03	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	7/2	5/2	10	243.80	0.03	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	1, 0, 1← 0, 0, 0	Ground	5/2	3/2	10	248.08	.05	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	1, 0, 1← 0, 0, 0	Ground	1/2	3/2	10	255.97	.05	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground				10 262.41	.1	
t-C ¹² _* HDC ¹² H ₂ C ¹² _* Cl ³⁵ Cl ³⁷	4-1067	10, 6, 4←10, 5, 5	Ground				10 270.1		
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	9/2	7/2	10	271.55	0.03	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	11/2	9/2	10	271.55	0.03	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	7/2	5/2	10	275.20	0.03	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	5/2	3/2	10	275.20	0.03	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Ground	1 3/2 2	5/2	10	278.079	.001	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Ground	3 5/2 3	7/2	10	278.136	.001	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Ground	1 1/2 1	3/2	10	278.168	.001	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Ground	3 5/2 1	3/2	10	278.225	.001	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Ground				10 278.245	.001	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Excited	1 3/2 3	5/2	10	278.264	.001	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Ground	1 3/2 1	1/2	10	278.323	.001	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Ground	3 7/2 3	5/2	10	278.355	.001	
HDO ¹⁶	4-1712	2, 2, 1← 2, 2, 0	Ground	2 5/2 1	3/2	10	278.412	.001	
C ¹² H ₃ C ¹² _* H ₂ O ¹⁶ C ¹² _* C ¹² H ₃	3- 951	3, 2, 1← 3, 1, 2	Ground				10 281.98	.2	
N ¹⁴ H ₃	4-1771	12, 4←12, 4	Ground				10 293.46	.10	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	9/2	7/2	10	302.91	0.03	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	11/2	9/2	10	302.91	0.03	
DC ¹² DO ¹⁶	4- 384	10, 3, 7←10, 3, 8	Ground				10 304.64		
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	5/2	3/2	10	306.50	0.03	
Tl ²⁰⁵ Br ⁷⁹	1-	4← 3	Excited	7/2	5/2	10	306.50	0.03	
(C ¹² H ₃) ₃ Si ²⁸ D	3- 872	1, ← 0,	Ground				10 319.4	.10	
Tl ²⁰³ Br ⁷⁹	1-	4← 3	Excited	9/2	7/2	10	331.16	0.04	
Tl ²⁰³ Br ⁷⁹	1-	4← 3	Excited	11/2	9/2	10	331.16	0.04	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
D ₃ O ¹⁶	3- 592	2, 0, 2← 1, 1, 1	Ground					10 332.3	.5
Br ⁷⁹	1-	4← 3	Ground	9/2		7/2		10 334.35	0.03
Br ⁷⁹	1-	4← 3	Ground	11/2		9/2		10 334.35	0.03
O ₂ ¹⁶	3- 43	8, , ← 8, ,						10 336.	3.
Br ⁷⁹	1-	4← 3	Ground	7/2		5/2		10 337.98	0.03
Br ⁷⁹	1-	4← 3	Ground	5/2		3/2		10 337.98	0.03
O ₃ ¹⁶	3- 31	6, 5, 1← 6, 5, 2	Ground					10 344.23	
Br ⁷⁹	1-	4← 3	Ground	9/2		7/2		10 362.63	0.03
Br ⁷⁹	1-	4← 3	Ground	11/2		9/2		10 362.63	0.03
Br ⁷⁹	1-	4← 3	Ground	7/2		5/2		10 366.24	0.04
Br ⁷⁹	1-	4← 3	Ground	5/2		3/2		10 366.24	0.04
H ₂ O ¹⁶	4- 381	23, 4, 19← 23, 4, 20	Ground					10 366.51	
O ¹⁷	4-1714	2, 2, 0← 2, 2, 1	Ground					10 374.56	
I ₃ C ¹² F ¹⁹ ;C ¹² H ₂	3- 721	8, 6, 2← 8, 6, 3	Ground					10 379.75	.1
I ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					10 379.79	.1
I ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					10 381.21	.1
I ₃ C ¹³ H ₂ Cl ³⁵	3- 546	1, 0, 1← 0, 0, 0	Ground	3/2		3/2		10 386.51	.05
Cl ³⁷	1-	2← 1	Excited	5/2		3/2		10 387.80	0.12
Cl ³⁷	1-	2← 1	Excited	7/2		5/2		10 387.80	0.12
I ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ H	3- 661	9, , ← 8, ,	Ground					10 388.5	
I ₃	4-1771	16, 10← 16, 10	Ground					10 397.12	.10
I ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	1, 1, 0← 1, 0, 1	Ground					10 397.79	.05
ON ¹⁵ C ¹² HO ¹⁶	3- 158	3, 0, 3← 2, 1, 2	Ground					10 397.83	
I ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	1, 1, 0← 1, 0, 1	Ground					10 398.58	.05
I ₃ C ¹³ H ₂ Cl ³⁵	3- 546	1, 0, 1← 0, 0, 0	Ground	5/2		3/2		10 398.86	.05
I ₃ C ¹² F ¹⁹ ;C ¹² H ₂	3- 721	8, 6, 2← 8, 6, 3	Ground					10 399.20	.1
D ₃ O ¹⁶	3- 592	Not Reported	Ground					10 400.	5.
Cl ³⁷	1-	2← 1	Excited	7/2		5/2		10 403.28	0.06
Cl ³⁷	1-	2← 1	Excited	5/2		3/2		10 403.28	0.06
I ₃ C ¹³ H ₂ Cl ³⁵	3- 546	1, 0, 1← 0, 0, 0	Ground	1/2		3/2		10 408.78	.05
I ₃ S ³² C ¹² D ₃	3- 606	1, 1, 0← 1, 0, 1	Ground					10 413.11	.05
D ₃ O ¹⁶	3- 592	Not Reported	Ground					10 415.	5.
N ¹⁴	4- 292	7← 7	Excited					10 419.88	.03
D ₃ O ¹⁶	3- 592	Not Reported	Ground					10 425.	5.
I ₃ S ³² C ¹² D ₃	3- 606	1, 1, 0← 1, 0, 1	Ground					10 425.98	.05
I ₃	4-1771	13, 6← 13, 6	Ground					10 426.76	.10
Cl ³⁷	1-	2← 1	Ground	7/2		5/2		10 432.38	0.06
Cl ³⁷	1-	2← 1	Ground	5/2		3/2		10 432.38	0.06
I ₃ S ³² C ¹² D ₃	3- 606	1, 1, 0← 1, 0, 1	Ground					10 432.81	.05
I ₃ C ¹² F ¹⁹ ;C ¹² H ₂	3- 721	12, 9, 3← 12, 9, 4	Ground					10 433.24	.1
Cl ³⁷	1-	2← 1	Ground	3/2		3/2		10 434.48	0.06
H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	5, 3, 3← 5, 2, 4	Ground					10 441.2	
I ₃ S ³² C ¹² D ₃	3- 606	1, 1, 0← 1, 0, 1	Ground					10 441.92	.05
I ₃ C ¹² H ₂ Cl ³⁵	3- 541	1, 0, 1← 0, 0, 0	Ground	3/2		3/2		10 446.11	.05
Cl ³⁷	1-	2← 1	Ground	5/2		3/2		10 447.98	0.06

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Tl ²⁰³ Cl ³⁷	1-	2← 1	Ground	7/2	5/2			10 447.98	0.06
c-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1066	10, 6, 4←10, 5, 5	Ground					10 455.2	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	1, 0, 1← 0, 0, 0	Ground					10 456.00	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	1, 0, 1← 0, 0, 0	Ground	5/2	3/2			10 458.46	.05
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	2, 0, 2← 1, 1, 1	Ground					10 463.1	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	12, 9, 3←12, 9, 4	Ground					10 467.23	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	1, 0, 1← 0, 0, 0	Ground	1/2	3/2			10 468.37	.05
F ₃ ¹⁹ B ^b :N ^b (C ¹² H ₃) ₃	3- 801	3, ← 2,						10 480.	
N ¹⁴ H ₃	4-1771	11, 1←11, 1	Ground					10 481.73	.025
N ¹⁴ H ₃	4-1771	11, 1←11, 1	Ground					10 482.02	.025
DN ¹⁴ O ₃ ¹⁶	3- 32	12, 9, 3←12, 9, 4	Ground					10 487.08	
C ¹³ H ₃ (C ¹² H ₃) ₂ Si ^b H	3- 877	1, 1, 0← 0, 0, 0	Ground					10 514.75	.1
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	1, 0, 1← 0, 0, 0	Ground	3/2	3/2			10 532.72	
N ¹⁴ H ₃	4-1771	11, 3←11, 3	Ground					10 536.30	.10
N ^b O ₂ Cl ^b	4-1463	Not Reported						10 540.90	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	1, 0, 1← 0, 0, 0	Ground	5/2	3/2			10 544.88	
S ³⁴ O ₂ ¹⁶	4-1833	1, 1, 1← 2, 0, 2	Ground					10 547.91	.02
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	8, 6, 2← 8, 6, 3	Ground					10 556.52	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground	25/2	27/2			10 558.4	
(C ¹² H ₃) ₂ O ¹⁸	3- 595	2, 0, 2← 1, 1, 1	Ground					10 558.5	.2
D ₂ O ₂ ¹⁶	3- 42	Not Reported						10 560.	3.
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground	27/2	29/2			10 565.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground	29/2	31/2			10 572.8	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	4, 4, 1← 4, 3, 2	Ground					10 580.7	
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground	31/2	33/2			10 581.5	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	2, 1, 2← 1, 1, 1	Ground					10 582.3	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	28, 2,26←28, 2,27	Ground					10 588.88	
N ^b O ₂ Cl ^b	4-1463	Not Reported						10 591.50	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	7, 5, 2← 7, 4, 3	Ground					10 603.1	
c-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1066	9, 4, 5← 9, 3, 6	Ground					10 652.8	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					10 660.	
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁵	4- 671	3, 1, 2← 3, 0, 3	Ground					10 668.00	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	3, 1, 2← 3, 1, 3	Ground	2	2			10 672.20	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	3, 1, 2← 3, 1, 3	Ground	4	4			10 672.88	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	3, 1, 2← 3, 1, 3	Ground	3	3			10 675.03	.10
(C ¹² H ₃) ₃ Si ²⁸ H	3- 871	1, ← 0,	Ground					10 690.34	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	5, 4, 2← 5, 3, 3	Ground					10 694.4	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	3, 1, 2← 3, 0, 3	Ground					10 705.27	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground					10 716.9	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	12, 9, 3←12, 9, 4	Ground					10 727.50	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	12, 9, 3←12, 9, 4	Ground					10 728.17	.1
F ¹⁹ H ₂ C ¹² H ₂ Cl ³⁵	3- 441	1, 1, 0← 1, 0, 1	Ground					10 729.7	.1
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	2, ← 1,	Ground					10 732.9	.1
F ¹⁹ H ₂ C ¹² H ₂ Cl ³⁷	3- 442	1, 1, 0← 1, 0, 1	Ground					10 744.55	
N ¹⁴ H ₃	4-1771	15, 9←15, 9	Ground					10 754.56	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² ₃ HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1067	9, 4, 5← 9, 3, 6	Ground					10 758.8	
N ¹⁴ H ₃	4-1771	11, 2←11, 2	Ground					10 759.82	.05
HC ¹² :C ¹² C ¹² DO ¹⁶	4- 921	6, 0, 6← 5, 1, 5	Ground					10 763.74	.02
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7,22←29, 6,23	Ground	53/2		55/2		10 767.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7,22←29, 6,23	Ground	55/2		57/2		10 768.9	
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7,22←29, 6,23	Ground	57/2		59/2		10 770.7	
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	5, 2, 3← 5, 1, 4	Ground					10 771.40	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7,22←29, 6,23	Ground	59/2		61/2		10 771.9	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					10 786.85	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 2, 1← 3, 2, 2	Ground					10 790.88	.1
HDS ³⁴	4-1729	4, 3, 1← 4, 3, 2	Ground					10 802.36	
DN ¹⁴ O ₄ ¹⁶	3- 32	4, 3, 1← 4, 3, 2	Ground					10 807.99	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					10 816.43	.1
HDS ³³	4-1728	4, 3, 1← 4, 3, 2	Ground	5/2		5/2		10 830.54	
HDS ³³	4-1728	4, 3, 1← 4, 3, 2	Ground	11/2		11/2		10 830.83	
HDS ³³	4-1728	4, 3, 1← 4, 3, 2	Ground	7/2		7/2		10 831.37	
HDS ³³	4-1728	4, 3, 1← 4, 3, 2	Ground	5/2		5/2		10 831.63	
HDO ₂ ¹⁶	3- 43	3, , ← 3, ,						10 836.	3.
N ¹⁴ H ₃	4-1771	12, 3←12, 3	Ground					10 836.10	.05
Ti ²⁰⁵ Cl ³⁵	1-	2← 1	Excited	7/2		5/2		10 841.66	0.03
Ti ²⁰⁵ Cl ³⁵	1-	2← 1	Excited	5/2		3/2		10 841.66	0.03
N ¹⁴ H ₂ D	4-1773	6, 1, 6← 6, 0, 6	Ground					10 842.62	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					10 844.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 5, 6←10, 6, 5	Ground					10 845.88	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 5, 6←10, 6, 5	Ground					10 846.38	.1
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	1, 0, 1← 0, 0, 0	Ground	3/2		3/2		10 849.36	
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	1, 0, 1← 0, 0, 0	Ground	5/2		3/2		10 858.96	
HDS ³²	4-1727	4, 3, 1← 4, 3, 2	Ground					10 861.07	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	5, 4, 2← 5, 3, 3	Ground					10 863.7	
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	6, 4, 3← 6, 3, 4	Ground					10 863.8	
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	1, 0, 1← 0, 0, 0	Ground	1/2		3/2		10 866.65	
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground	31/2		33/2		10 868.7	
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground	29/2		31/2		10 877.8	
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	1, 0, 1← 0, 0, 0	Ground					10 879.95	.2
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	4, 1, 3← 4, 0, 4	Ground					10 887.01	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground	27/2		29/2		10 887.1	
Ti ²⁰⁵ Cl ³⁵	1-	2← 1	Excited	7/2		5/2		10 888.80	0.03
Ti ²⁰⁵ Cl ³⁵	1-	2← 1	Excited	5/2		3/2		10 888.80	0.03
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 4,11←15, 3,12	Ground	25/2		27/2		10 896.2	
c-HDN ¹⁵ C ¹² HO ¹⁶	3- 158	1, 1, 1← 2, 0, 2	Ground					10 897.20	
t-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1067	6, 4, 3← 6, 3, 4	Ground					10 903.5	
Ti ²⁰³ Cl ³⁵	1-	2← 1	Excited	7/2		5/2		10 904.36	0.03
Ti ²⁰³ Cl ³⁵	1-	2← 1	Excited	5/2		3/2		10 904.36	0.03
D ₂ O ¹⁶	4-1713	3, 1, 3← 2, 2, 0	Ground	7/2	3	5/2	2	10 919.301	.001
D ₂ O ¹⁶	4-1713	3, 1, 3← 2, 2, 0	Ground	9/2	5	7/2	4	10 919.357	.001

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
D ₂ O ¹⁶	4-1713	3, 1, 3← 2, 2, 0	Ground	5/2	4	3/2	3	10 919.521	.001
D ₂ O ¹⁶	4-1713	3, 1, 3← 2, 2, 0	Ground	9/2	3	7/2	2	10 919.603	.001
N ^b O ₂ Cl ^b	4-1463	Not Reported						10 931.70	
Tl ²⁰⁵ Cl ³⁵	1-	2← 1	Ground		7/2		5/2	10 936.48	0.02
Tl ²⁰⁵ Cl ³⁵	1-	2← 1	Ground		5/2		3/2	10 936.48	0.02
Tl ²⁰⁵ Cl ³⁵	1-	2← 1	Ground		3/2		3/2	10 939.30	0.02
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					10 939.88	.1
D ₂ O ¹⁶	4-1713	4, 4, 1← 5, 3, 2	Ground					10 947.13	.05
Tl ²⁰³ Cl ³⁵	1-	2← 1	Ground		7/2		5/2	10 952.16	0.03
Tl ²⁰³ Cl ³⁵	1-	2← 1	Ground		5/2		3/2	10 952.16	0.03
c-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1066	6, 4, 3← 6, 3, 4	Ground					10 957.8	
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	2, 2, 0← 2, 1, 1	Ground					10 967.72	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7.22←29, 6.23	Ground					10 976.7	
C ¹² H ₃ S ³² H	3- 221	6, 1, 5← 6, 1, 6	Ground					10 983.4	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	6, 2, 4← 6, 1, 5	Ground					11 007.3	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground		1		2	11 007.38	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground		2		2	11 008.88	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground		1		1	11 008.88	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground		2		3	11 009.65	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground		0		1	11 012.32	.10
Br ⁷⁹ F ₃ ¹⁹	4- 81	3, 1, 2← 3, 0, 3	Ground		7/2		7/2	11 022.16	
Br ⁸¹ F ₃ ¹⁹	4- 82	3, 1, 2← 3, 0, 3	Ground		7/2		7/2	11 033.69	
a-C ¹² H ₂ DS ³² C ¹² H ₃	3- 605	1, 1, 0← 1, 0, 1	Ground					11 044.96	.05
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					11 050.5	.1
H ₂ O ₂ ¹⁶	3- 41	Not Reported						11 072.4	.5
O ₃ ¹⁶	4-1841	4, 0, 4← 3, 1, 3	Ground					11 073.	
HC ¹² DO ¹⁶	4- 385	19, 4.15←19, 4.16	Ground					11 074.30	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					11 087.72	.1
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	1, 0, 1← 0, 0, 0	Ground		3/2		3/2	11 104.15	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						11 112.	3.
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	1, 0, 1← 0, 0, 0	Ground		5/2		3/2	11 116.33	
N ¹⁴ O ₂ F ¹⁹	4-1581	8, 6, 2← 8, 6, 3	Ground					11 120.0	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	7, 5, 2← 7, 4, 3	Ground					11 121.9	
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	1, 0, 1← 0, 0, 0	Ground		1/2		3/2	11 126.05	
N ¹⁴ H ₃	4-1771	12, 5←12, 5	Ground					11 132.70	.05
Br ⁸¹ F ₃ ¹⁹	4- 82	3, 1, 2← 3, 0, 3	Ground		5/2		5/2	11 150.02	
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁷	3- 442	2, 1, 1← 2, 0, 2	Ground					11 152.15	
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁵	3- 441	2, 1, 1← 2, 0, 2	Ground					11 155.	.1
Br ⁷⁹ F ₃ ¹⁹	4- 81	3, 1, 2← 3, 0, 3	Ground		5/2		5/2	11 162.14	
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	3, 0, 3← 2, 1, 2	Ground					11 167.75	.2
N ¹⁴ H ₃	4-1771	14, 8←14, 8	Ground					11 177.38	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7.22←29, 6.23	Ground		59/2		61/2	11 179.3	
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7.22←29, 6.23	Ground		57/2		59/2	11 181.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7.22←29, 6.23	Ground		55/2		57/2	11 183.0	
Cl ³⁵ O ₂ ¹⁶	4-1381	28, 7.22←29, 6.23	Ground		53/2		55/2	11 184.5	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
a-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 597	2, 0, 2← 1, 1, 1	Ground					11 201.6	.2
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	19, 6,14←19, 5,14	Ground					11 204.67	.2
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	19, 6,14←19, 5,14	Ground					11 205.59	.2
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	19, 6,14←19, 5,14	Ground					11 206.47	.2
t-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1067	6, 5, 1← 6, 4, 2	Ground					11 206.5	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	23,17, 6←23,17, 7	Ground					11 235.41	.1
HDS ³⁴	4-1729	2, 2, 0← 2, 2, 1	Ground					11 235.45	
C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵	4-1065	9, 4, 5← 9, 3, 6	Ground					11 236.2	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	23,17, 6←23,17, 7	Ground					11 236.52	.1
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	3/2		1/2		11 251.28	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	5/2		7/2		11 252.85	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	5/2		3/2		11 254.82	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	1/2		1/2		11 257.16	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	7/2		7/2		11 258.55	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	3/2		3/2		11 259.09	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	5/2		5/2		11 260.52	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	3/2		5/2		11 264.78	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground					11 264.78	
HDS ³³	4-1728	2, 2, 0← 2, 2, 1	Ground	7/2		5/2		11 266.35	
Br ⁸¹ F ₃ ¹⁹	4- 82	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		11 282.56	
HDS ³²	4-1727	2, 2, 0← 2, 2, 1	Ground					11 283.83	.05
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	2, 1, 1← 2, 0, 2	Ground					11 309.18	.05
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	2, 1, 1← 2, 0, 2	Ground					11 310.02	.05
Br ⁷⁹ F ₃ ¹⁹	4- 81	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		11 319.44	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 1, 1← 1, 0, 1	Ground					11 341.70	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	2, 0, 2← 1, 0, 1	Ground					11 349.1	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						11 351.2	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	11, 3←12, 2	Ground					11 351.4	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						11 351.56	
c-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1066	6, 5, 1← 6, 4, 2	Ground					11 361.1	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	11, 3←12, 2	Ground					11 363.0	
S ³³ O ₂ ¹⁶	4-1832	1, 1, 1← 2, 0, 2	Ground	1/2		1/2		11 368.002	.015
S ³³ O ₂ ¹⁶	4-1832	1, 1, 1← 2, 0, 2	Ground	1/2		3/2		11 368.002	.015
S ³³ O ₂ ¹⁶	4-1832	1, 1, 1← 2, 0, 2	Ground	5/2		7/2		11 373.286	.015
S ³³ O ₂ ¹⁶	4-1832	1, 1, 1← 2, 0, 2	Ground	5/2		5/2		11 373.286	.015
S ³³ O ₂ ¹⁶	4-1832	1, 1, 1← 2, 0, 2	Ground	5/2		3/2		11 373.286	.015
S ³³ O ₂ ¹⁶	4-1832	1, 1, 1← 2, 0, 2	Ground	3/2		3/2		11 379.825	.015
S ³³ O ₂ ¹⁶	4-1832	1, 1, 1← 2, 0, 2	Ground	3/2		1/2		11 379.825	.015
S ³³ O ₂ ¹⁶	4-1832	1, 1, 1← 2, 0, 2	Ground	3/2		5/2		11 379.825	.015
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						11 388.0	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						11 390.0	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						11 391.	3.
N ¹⁴ H ₃	4-1771	Not Reported	Ground					11 400.	
Br ⁸¹ F ₃ ¹⁹	4- 82	3, 1, 2← 3, 0, 3	Ground	3/2		3/2		11 401.82	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						11 406.2	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						11 413.67	
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	1, 0, 1← 0, 0, 0	Ground					11 419.54	.2
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	7, 1, 6← 6, 2, 5	Ground					11 423.09	
DC ¹² N ¹⁴	4- 292	5← 5	Excited					11 449.55	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						11 460.	3.
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	7, 2, 5← 7, 2, 6	Ground					11 461.77	.35
Br ⁷⁹ F ₃ ¹⁹	4- 81	3, 1, 2← 3, 0, 3	Ground	3/2		3/2		11 462.68	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					11 466.80	.1
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	1, 1, 1← 0, 0, 0	Ground					11 492.04	.2
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	1, 1, 1← 0, 0, 0	Ground					11 500.72	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 1, 4← 3, 2, 1	Ground					11 502.18	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	33, 5,28←33, 5,29						11 512.	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	6, 4, 3← 6, 3, 4	Ground					11 521.0	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 3, 1← 4, 2, 2	Ground					11 521.81	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 3, 1← 4, 2, 2	Ground					11 525.52	.1
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	1, 1, 1← 0, 0, 0	Ground					11 526.30	.2
c-C ¹² *HDC ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1066	5, 1, 4← 5, 0, 5	Ground					11 529.8	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 3, 1← 4, 2, 2	Ground					11 542.43	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	3, 0, 3← 2, 1, 2	Ground	2		1		11 567.22	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	3, 0, 3← 2, 1, 2	Ground	4		3		11 567.73	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	3, 0, 3← 2, 1, 2	Ground	3		2		11 569.21	.10
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	2, 1, 2← 3, 0, 3	Ground					11 575.0	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	6, 4, 3← 6, 3, 4	Ground					11 601.2	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	3, 0, 3← 2, 1, 2	Ground	1		0		11 633.8	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	3, 0, 3← 2, 1, 2	Ground	2		1		11 640.1	
F ¹⁹ HC ¹² O ¹⁶	4- 271	2, 1, 2← 3, 0, 3						11 647.9	.1
F ¹⁹ HC ¹² O ¹⁶	4- 271	3, 0, 3← 2, 1, 2						11 648.01	.04
N ¹⁴ H ₃	4-1771	13, 7←13, 7	Ground					11 673.16	.05
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	3, 0, 3← 2, 1, 2	Ground	3		2		11 677.5	
DN ¹⁴ O ₃ ¹⁶	3- 32	8, 6, 2← 8, 6, 3	Ground					11 680.10	
DC ¹² N ¹⁴	4- 292	4← 4	Excited					11 680.55	.1
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -A	3- 513	1, 0, 1← 0, 0, 0	Ground					11 714.45	.2
(C ¹² H ₃) ₂ S ³⁴	3- 602	1, 1, 0← 1, 0, 1	Ground					11 724.09	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 2, 1← 3, 1, 2	Ground					11 724.93	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 2, 1← 3, 1, 2	Ground					11 725.89	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	30,22, 8←30,22, 9	Ground					11 726.82	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	30,22, 8←30,22, 9	Ground					11 727.84	.1
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁵	4- 671	4, 1, 3← 4, 0, 4	Ground					11 730.06	
C ₆ H ₅ F ¹⁹	4-1281	3, 1, 3← 2, 1, 2	Ground					11 731.9	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	3, 0, 3← 2, 1, 2	Ground	4		3		11 736.2	
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	1, 1, 1← 2, 0, 2	Ground					11 747.37	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	23,14, ←24,13,	Ground					11 747.79	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	23,14, ←24,13,	Ground					11 748.57	.1
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	5, 5, 0← 5, 4, 1	Ground					11 752.0	
HC ¹² HO ¹⁶	4- 381	15, 3,12←15, 3,13	Ground					11 753.13	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 2, 1← 3, 1, 2	Ground					11 760.50	.1
C ¹² ₃ HDC ¹² H ₂ C ¹² *Cl ³⁵ ₂	4-1065	5, 1, 4← 5, 0, 5	Ground					11 772.1	
O ¹⁶ F ¹⁹ ₂	4-1611	22, 4, 19←21, 5, 16	Ground					11 778.86	.10
DC ¹² : C ¹² C ¹² DO ¹⁶	4- 926	3, 1, 3← 4, 0, 4	Ground					11 782.99	.02
F ¹⁹ H ₂ C ¹² ₂ H ₂ Cl ³⁷	3- 442	3, 1, 2← 3, 0, 3	Ground					11 784.5	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					11 786.82	
O ^b O ^b O ^b	4-1847	Not Reported						11 812.9	
F ¹⁹ H ₂ C ¹² ₂ H ₂ Cl ³⁵	3- 441	3, 1, 2← 3, 0, 3	Ground					11 815.4	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					11 819.80	
O ^b O ^b O ^b	4-1847	Not Reported						11 826.6	
C ¹² H ₃ O ¹⁶ H	3- 211	32, 2, ←32, 1,	Ground					11 841.9	.1
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	1, 1, 0← 1, 0, 1	Ground					11 857.06	.05
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	1, 1, 0← 1, 0, 1	Ground					11 858.19	.05
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	1, 1, 0← 1, 0, 1	Ground					11 859.33	.05
HC ¹² N ¹⁵	4- 295	7← 7	Excited					11 861.0	.1
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ E	3- 504	1, 0, 1← 0, 0, 0	Ground					11 877.95	.2
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ A	3- 503	1, 0, 1← 0, 0, 0	Ground					11 878.80	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					11 878.90	.04
Cl ³⁵ C ¹² N ¹⁴	4- 171	1← 0	Ground					11 879.	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	2, 1, 2← 1, 1, 1	Ground					11 881.80	.2
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D	3- 506	1, 0, 1← 0, 0, 0	Ground					11 895.09	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ A	3- 511	1, 0, 1← 0, 0, 0	Ground					11 930.69	.2
Cl ³⁵ C ¹³ N ¹⁴	4- 172	1← 0	Ground					11 941.	
N ¹⁴ H ₃	4-1771	11, 4←11, 4	Ground					11 947.14	.06
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	3, 1, 2← 3, 0, 3	Ground					11 958.60	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	3, 1, 2← 3, 0, 3	Ground					11 959.51	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	3, 1, 2← 3, 0, 3	Ground					11 960.42	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	13, 3, ←12, 4,	Ground					11 961.29	.1
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	7, 3, 5← 7, 2, 5	Ground					11 973.07	.2
N ¹⁴ H ₃	4-1771	Not Reported	Ground					11 975.	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground	1		2		11 980.31	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground	2		2		11 981.85	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground	1		1		11 981.85	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground	2		3		11 982.69	.10
N ¹⁴ H ₃	4-1771	Not Reported	Ground					11 983.	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 1, 1← 2, 0, 2	Ground	0		1		11 985.43	.10
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	3, 0, 3← 2, 1, 2	Ground	5		4		12 011.4	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	3, 0, 3← 2, 1, 2	Ground					12 015.05	.2
N ¹⁴ H ₃	4-1771	10, 1←10, 1	Ground					12 017.02	.020
N ¹⁴ H ₃	4-1771	10, 1←10, 1	Ground					12 017.30	.020
HC ¹³ N ¹⁴	4- 293	7← 7	Excited					12 023.25	.05
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	3, 0, 3← 2, 1, 2	Ground	4		3		12 026.6	
C ¹³ H ₃ S ³² C ¹² H ₃	3- 603	1, 1, 0← 1, 0, 1	Ground					12 032.78	.05
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	3, 0, 3← 2, 1, 2	Ground	3		2		12 036.7	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	3, 0, 3← 2, 1, 2	Ground	2		1		12 042.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 061.92	.1
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ³⁵	4-1063	3, 0, 3← 2, 1, 2	Ground					12 062.6	
O ^b O ^b O ^b	4-1847	Not Reported						12 067.8	
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -A	3- 515	1, 0, 1← 0, 0, 0	Ground					12 068.35	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 1, 0← 1, 0, 1	Ground					12 072.04	.1
(C ¹² H ₃) ₂ S ³²	3- 601	1, 1, 0← 1, 0, 1	Ground					12 091.72	.05
(C ¹² H ₃) ₂ S ³²	3- 601	1, 1, 0← 1, 0, 1	Ground					12 091.96	.05
(C ¹² H ₃) ₂ S ³²	3- 601	1, 1, 0← 1, 0, 1	Ground					12 092.03	.05
(C ¹² H ₃) ₂ S ³²	3- 601	1, 1, 0← 1, 0, 1	Ground					12 092.20	.05
C ¹² *D ₂ C ¹² D ₂ C ¹² *C ¹³⁵ Cl ³⁷	4-1064	2, 2, 1← 1, 1, 0	Ground					12 096.5	
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	2, 1, 1← 2, 0, 2	Ground					12 111.96	.05
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	2, 1, 1← 2, 0, 2	Ground					12 114.76	.05
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	2, 1, 1← 2, 0, 2	Ground					12 122.46	.05
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	2, 1, 1← 2, 0, 2	Ground					12 123.88	.05
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 509	1, 0, 1← 0, 0, 0	Ground					12 127.05	.2
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 508	1, 0, 1← 0, 0, 0	Ground					12 127.96	.2
(C ¹² H ₃) ₂ S ³²	3- 601	2, 1, 2← 2, 2, 1	Ground					12 142.83	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 1, 2← 2, 2, 1	Ground					12 143.37	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 1, 2← 2, 2, 1	Ground					12 143.86	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 1, 2← 2, 2, 1	Ground					12 143.99	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					12 147.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					12 150.	
N ¹⁴ H ₂ D	4-1773	7, 1, 7← 7, 0, 7	Ground					12 154.57	.05
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	11, 2, 9←11, 2,10	Ground					12 158.31	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	13, 3, ←12, 4,	Ground					12 162.44	.1
O ¹⁶ C ¹² S ³²	4- 521	1← 0	Ground					12 162.97	
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	3, 0, 3← 2, 1, 2	Ground					12 166.33	
O ^b O ^b O ^b	4-1847	Not Reported						12 171.0	
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	2, 1, 2← 1, 1, 1	Ground					12 177.98	.2
C ¹² H ₃ O ¹⁶ H	3- 211	3, 1, ← 2, 0,	Ground					12 178.6	.1
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	2, 1, 2← 1, 1, 1	Ground					12 192.56	.2
C ¹² ⊖D ₂ C ¹² D ₂ C ¹² ⊖Cl ³⁵ Cl ³⁷	4-1064	3, 1, 3← 2, 0, 2	Ground					12 202.5	
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	1, 0, 1← 0, 0, 0	Ground					12 218.21	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	1, 0, 1← 0, 0, 0	Ground					12 219.29	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					12 229.4	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	15, 5, ←16, 4,	Ground					12 238.84	.1
N ¹⁴ H ₃	4-1771	12, 6←12, 6	Ground					12 251.46	.06
C ¹² H ₃ N ¹⁴ H ₂	3- 261	15, 5, ←16, 4,	Ground					12 258.96	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 271.51	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	4, 1, 3← 4, 1, 4	Ground					12 273.5	.3
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 4, 1← 5, 3, 2	Ground					12 291.71	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 4, 1← 5, 3, 2	Ground					12 301.64	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 306.86	.1
N ¹⁴ H ₃	4-1771	17,12←17,12	Ground					12 308.40	.10
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 4, 1← 5, 3, 2	Ground					12 311.73	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HN ¹⁴ O ₃ ¹⁶	3- 31	11, 9, 2←11, 9, 3	Ground					12 317.35	
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	5, 1, 4← 5, 1, 5	Ground					12 319.72	.3
D ₂ O ₂ ¹⁶	3- 42	Not Reported						12 335.	3.
N ¹⁴ H ₃	4-1771	10, 2←10, 2	Ground					12 336.48	.05
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported	Ground					12 338.17	
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	5, 1, 4← 5, 1, 5	Ground					12 339.69	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 1, 1← 2, 1, 2	Ground					12 343.48	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported	Ground					12 366.25	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						12 381.40	
O ¹⁶ F ₂ ¹⁹	4-1611	36, 7,30←35, 8,27	Ground					12 387.79	.10
F ¹⁹ HC ¹² O ¹⁶	4- 271	4, 0, 4← 3, 1, 3						12 388.8	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 4, 0← 4, 3, 1	Ground					12 389.35	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						12 391.52	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					12 392.	
s-C ¹² H ₂ DS ³² C ¹² H ₃	3- 604	1, 1, 0← 1, 0, 1	Ground					12 393.28	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	3, 2, 1← 3, 1, 2	Ground					12 398.58	.4
N ¹⁴ H ₂ D	4-1773	10, 2, 9←10, 1, 9	Ground					12 399.24	.05
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground		5/2		3/2	12 400.35	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground		5/2		3/2	12 401.33	.5
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	3, 1, 3← 2, 0, 2	Ground					12 403.3	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						12 424.12	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	1, 1, 1← 0, 0, 0	Ground		3/2		3/2	12 426.91	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	1, 1, 1← 0, 0, 0	Ground		3/2		3/2	12 433.58	.15
C ¹² H ₃ N ¹⁴ H ₂	3- 261	13, 3, ←12, 4,	Ground					12 444.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					12 444.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 444.04	.04
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 445.	
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited		7/2		7/2	12 451.36	.5
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 4, 0← 4, 3, 1	Ground					12 458.58	.1
N ¹⁴ H ₃	4-1771	16,11←16,11	Ground					12 461.04	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	2, 1, 1← 1, 1, 0	Ground					12 465.9	
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	1, 1, 1← 0, 0, 0	Ground					12 479.45	.04
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	1, 1, 1← 0, 0, 0	Ground					12 481.21	.04
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	1, 1, 1← 0, 0, 0	Ground					12 482.76	.04
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 482.96	.04
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 4, 0← 4, 3, 1	Ground					12 483.38	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 484.56	.04
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	1, 1, 1← 0, 0, 0	Ground		5/2		3/2	12 484.78	.15
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground		7/2		7/2	12 489.27	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground		7/2		7/2	12 489.88	.5
C ₆ H ₅ F ¹⁹	4-1281	3, 0, 3← 2, 0, 2	Ground					12 492.5	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	1, 1, 1← 0, 0, 0	Ground		5/2		3/2	12 502.61	.15
C ¹² H ₃ O ¹⁶ H	3- 211	5, 1, ← 5, 1,	Ground					12 511.0	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	1, 1, 1← 0, 0, 0	Ground		1/2		3/2	12 531.19	.15
HN ¹⁴ O ₃ ¹⁶	3- 31	5, 4, 1← 5, 4, 2	Ground					12 540.98	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 1, 1← 2, 0, 2	Ground					12 545.38	.1
4d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1296	5, 1, 5← 4, 1, 4	Ground					12 547.0	.2
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁷	4-1472	3, ← 2,	Ground					12 550.	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	1, 1, 1← 0, 0, 0	Ground		1/2		3/2	12 558.12	.15
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited		7/2		7/2	12 558.38	.5
HC ¹² N ¹⁴	4- 291	7← 7	Excited					12 562.32	.03
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	3, 0, 3← 2, 1, 2	Ground					12 569.5	
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	1, 1, 1← 0, 0, 0	Ground					12 577.	.2
C ₆ ¹² H ₅ C ¹² N ¹⁵	4-1292	5, 1, 5← 4, 1, 4	Ground					12 586.0	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground					12 592.65	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 0, 1← 0, 0, 0	Ground					12 595.01	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					12 596.59	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 0, 1← 0, 0, 0	Ground					12 598.99	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 1, 4← 4, 1, 3	Ground					12 609.40	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 0, 1← 0, 0, 0	Ground					12 614.92	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground					12 620.	
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground		5/2		7/2	12 622.19	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 0, 1← 0, 0, 0	Ground					12 633.52	.1
3d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1295	5, 1, 5← 4, 1, 4	Ground					12 648.5	.2
D ₂ N ¹⁵ C ¹² HO ¹⁶	3- 161	1, 1, 1← 2, 0, 2	Ground					12 649.10	
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	4, 1, 3← 4, 1, 4	Ground					12 660.45	.2
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁷	3- 442	4, 1, 3← 4, 0, 4	Ground					12 665.0	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	3, 0, 3← 2, 1, 2	Ground					12 666.62	.4
DC ¹² N ¹⁵	4- 296	8← 8	Excited					12 667.25	.1
N ¹⁴ H ₃	4-1771	15,10←15,10	Ground					12 674.12	.05
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited		3/2		3/2	12 699.69	.5
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						12 706.25	
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	7, 1, 6← 7, 1, 7	Ground					12 714.59	.05
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	7, 1, 6← 7, 1, 7	Ground					12 715.13	.05
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁵	3- 441	4, 1, 3← 4, 0, 4	Ground					12 736.4	.1
4C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1301	5, 1, 5← 4, 1, 4	Ground					12 736.6	.3
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground		3/2		3/2	12 737.22	.5
Cl ³⁵ O ₂ ¹⁶	4-1381	13, 2,11←14, 1,14	Ground		29/2		31/2	12 742.7	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 744.25	.04
C ¹² D ₃ Si ²⁸ HD ₂	3- 331	9, 1, 8← 9, 1, 9						12 754.31	.2
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 1, 1← 2, 0, 2	Ground					12 756.4	.1
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	1, 1, 0← 1, 0, 1	Ground					12 758.30	.10
C ₆ ¹² H ₅ C ¹³ N ¹⁴	4-1293	5, 1, 5← 4, 1, 4	Ground					12 770.9	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					12 770.9	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						12 772.8	
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	3, 1, 2← 3, 0, 3	Ground					12 776.79	.05
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	3, 1, 2← 3, 0, 3	Ground					12 777.78	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					12 778.	
2d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1294	5, 1, 5← 4, 1, 4	Ground					12 782.1	.2
O ¹⁶ F ₂ ¹⁹	4-1611	14, 2,13←13, 3,10	Ground					12 782.59	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ H ₂ D	4-1773	8, 1, 8← 8, 0, 8	Ground					12 784.10	.05
3C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1299	5, 1, 5← 4, 1, 4	Ground					12 786.1	.2
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	1, 1, 1← 2, 0, 2	Ground		1		2	12 791.54	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	1, 1, 1← 2, 0, 2	Ground		2		3	12 793.90	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 6, 7←12, 7, 6	Ground					12 801.74	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 6, 7←12, 7, 6	Ground					12 802.48	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	2, 1, 1← 1, 1, 0	Ground					12 820.80	.2
Cl ³⁵ O ₂ ⁶	4-1381	13, 2,11←14, 1,14	Ground	27/2		29/2		12 822.4	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 1← 2, 0, 2	Ground					12 825.07	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 1← 2, 0, 2	Ground					12 830.22	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 1← 2, 0, 2	Ground					12 837.32	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 841.24	.1
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	2, 1, 2← 1, 1, 1	Ground					12 842.31	.2
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	1, 1, 1← 0, 0, 0	Ground					12 858.27	.2
2C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1298	5, 1, 5← 4, 1, 4	Ground					12 861.7	.3
Cl ³⁵ O ₂ ⁶	4-1381	13, 2,11←14, 1,14	Ground	25/2		27/2		12 883.5	
1C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1297	5, 1, 5← 4, 1, 4	Ground					12 888.8	.2
C ¹² H ₅ C ¹² N ¹⁴	4-1291	5, 1, 5← 4, 1, 4	Ground					12 897.8	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 1← 2, 0, 2	Ground					12 901.27	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					12 903.16	.1
DO ¹⁶	1-	13/2, 6←13/2, 6	Ground	13/2		13/2		12 918.01	.10
DO ¹⁶	1-	13/2, 6←13/2, 6	Ground	11/2		11/2		12 918.01	.10
DO ¹⁶	1-	13/2, 6←13/2, 6	Ground	15/2		15/2		12 918.01	10
N ¹⁴ H ₃	4-1771	11, 5←11, 5	Ground					12 923.10	.06
Cl ³⁵ O ₂ ⁶	4-1381	13, 2,11←14, 1,14	Ground	23/2		25/2		12 929.4	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground					12 946.7	
N ¹⁴ H ₃	4-1771	14, 9←14, 9	Ground					12 951.32	.06
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground	9/2		7/2		12 956.38	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground					12 958.1	
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited	7/2		5/2		12 959.17	.5
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	2, 1, 2← 1, 1, 1	Ground					12 960.62	.2
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	2, 1, 1← 2, 0, 2	Ground					12 978.49	.05
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	1, , ← 0, ,	Ground					12 979.4	.1
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	2, 1, 1← 2, 0, 2	Ground					12 979.76	.05
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	2, 1, 1← 2, 0, 2	Ground					12 981.03	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	3, 3, 0← 3, 2, 1	Ground					12 984.48	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 1, 1← 2, 0, 2	Ground					12 989.83	
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground	7/2		5/2		12 994.98	.5
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	1, 1, 1← 0, 0, 0	Ground					12 995.53	.03
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground	7/2		5/2		12 996.50	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground	7/2		5/2		12 996.93	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited	1/2		3/2		13 011.34	.5
C ₆ H ₅ F ¹⁹	4-1281	3, 2, 2← 2, 2, 1	Ground					13 015.7	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	19,14, 5←19,14, 6	Ground					13 019.59	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	19,14, 5←19,14, 6	Ground					13 020.78	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F		Frequency MHz	Acc. ±MHz
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited	9/2	7/2	13 021.92	.5
HDO ₂ ¹⁶	3- 43	2, , ← 2, ,				13 032.	3.
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	3, 0, 3← 2, 1, 2	Ground			13 039.14	.2
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground	1/2	3/2	13 048.33	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground			13 050.32	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground			13 065.	
4d-C ¹² H ₅ C ¹² N ¹⁴	4-1296	5, 0, 5← 4, 0, 4	Ground			13 072.4	.2
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	2, 1, 2← 1, 1, 1	Ground			13 083.99	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	2, 1, 1← 2, 1, 2	Ground			13 091.42	.2
C ¹² H ₅ Cl ³⁵	4-1271	5, 1, 5← 4, 1, 4	Ground			13 112.6	
a-C ¹² H ₂ DS ³² C ¹² H ₃	3- 605	2, 1, 1← 2, 0, 2	Ground			13 112.72	.05
C ¹² H ₅ C ¹² N ¹⁵	4-1292	5, 0, 5← 4, 0, 4	Ground			13 113.0	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground			13 113.3	.05
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	9, 2, 7← 9, 2, 8	Ground	10	10	13 113.34	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	9, 2, 7← 9, 2, 8	Ground	8	8	13 113.34	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	9, 2, 7← 9, 2, 8	Ground	9	9	13 114.20	.10
DC ¹³ N ¹⁴	4- 294	8← 8	Excited			13 114.35	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground			13 119.	
N ¹⁴ H ₂ D	4-1773	8, 1, 8← 8, 0, 8	Ground			13 119.94	.05
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	2, 0, 2← 1, 0, 1	Ground			13 128.25	.2
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground	5/2	5/2	13 129.36	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground	5/2	5/2	13 129.68	.5
c-HCl ³⁵ C ¹² ;C ¹² HCl ³⁵	4- 671	5, 1, 4← 5, 0, 5	Ground			13 147.17	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported				13 151.3	
Tl ²⁰³ F ¹⁹	1-	1← 0	Excited			13 155.78	0.06
C ¹² H ₅ F ¹⁹	4-1281	34,11,23←34,11,24	Ground			13 156.6	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	2, 1, 2← 1, 1, 1	Ground			13 165.78	.2
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	1, 1, 1← 0, 0, 0	Ground			13 170.70	.2
C ¹² *H ₂ C ¹³ H ₂ C ¹² *Cl ₂ ³⁵	4-1068	11, 5, 6←11, 4, 7	Ground			13 171.	
C ¹² *H ₂ C ¹³ H ₂ C ¹² *Cl ₂ ³⁵	4-1068	11, 7, 4←11, 6, 5	Ground			13 171.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground			13 175.	
3d-C ¹² H ₅ C ¹² N ¹⁴	4-1295	5, 0, 5← 4, 0, 4	Ground			13 175.7	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground			13 175.80	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground			13 176.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground			13 177.34	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	1, 1, 1← 0, 0, 0	Ground			13 188.21	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported				13 191.71	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported				13 192.5	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported				13 193.29	
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited	5/2	5/2	13 193.32	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported				13 194.13	
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	4, 1, 3← 4, 1, 4	Ground			13 199.17	.35
N ¹⁴ H ₃	4-1771	Not Reported	Ground			13 210.	
N ¹⁴ H ₂ D	4-1773	9, 1, 9← 9, 0, 9	Ground			13 217.78	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	3, 1, 3← 2, 0, 2	Ground			13 232.1	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		13 242.99	.1
Tl ²⁰⁵ F ¹⁹	1-	1← 0	Excited		13 244.92	0.04
C ₆ ¹² H ₅ F ¹⁹	4-1281	13, 4, 9←13, 4,10	Ground		13 246.4	
Tl ²⁰³ F ¹⁹	1-	1← 0	Excited		13 255.58	0.06
4C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1301	5, 0, 5← 4, 0, 4	Ground		13 269.7	.2
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		13 273.35	.1
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		13 279.04	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			13 279.22	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground		13 279.8	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			13 280.02	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground		13 291.3	
N ¹⁴ H ₃	4-1771	10, 3←10, 3	Ground		13 296.37	.06
N ¹⁴ H ₃	4-1771	13, 8←13, 8	Ground		13 297.49	.10
C ₆ ¹² H ₅ C ¹³ N ¹⁴	4-1293	5, 0, 5← 4, 0, 4	Ground		13 305.6	.2
2d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1294	5, 0, 5← 4, 0, 4	Ground		13 313.7	.2
N ¹⁴ H ₃	4-1771	Not Reported	Ground		13 316.	
N ¹⁴ H ₂ D	4-1773	9, 1, 9← 9, 0, 9	Ground		13 320.46	.05
3C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	5, 0, 5← 4, 0, 4	Ground		13 320.8	.1
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	3, 1, ← 2, 1,	Ground		13 324.45	.5
Tl ²⁰⁵ F ¹⁹	1-	1← 0	Ground		13 334.58	0.04
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		13 336.58	.1
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	1, 1, 1← 0, 0, 0	Ground		13 342.01	
Tl ²⁰³ F ¹⁹	1-	1← 0	Ground		13 345.80	0.06
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D	3- 506	1, 1, 0← 1, 0, 1	Ground		13 351.92	.35
4d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1296	5, 2, 4← 4, 2, 3	Ground		13 361.3	.2
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	1, 1, 0← 1, 0, 1	Ground		13 365.18	.35
D ₂ O ₂ ¹⁶	3- 42	Not Reported			13 366.	3.
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	1, 1, 0← 1, 0, 1	Ground		13 369.38	.35
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	4, 3, 1← 4, 2, 2	Ground		13 381.79	
D ₂ O ₂ ¹⁶	3- 42	Not Reported			13 387.	3.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		13 390.07	.1
DC ¹² N ¹⁴	4- 292	8← 8	Excited		13 394.50	.03
2C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1298	5, 0, 5← 4, 0, 4	Ground		13 399.6	.1
C ₆ ¹² H ₅ C ¹² N ¹⁵	4-1292	5, 2, 4← 4, 2, 3	Ground		13 405.7	.2
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 2← 3, 0, 3	Ground		13 406.8	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	19, 6, ←20, 5,	Ground		13 415.33	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	19, 6, ←20, 5,	Ground		13 416.57	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	1, 1, 0← 1, 0, 1			13 419.40	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			13 422.6	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	1, 1, 0← 1, 0, 1			13 423.33	.2
1C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1297	5, 0, 5← 4, 0, 4	Ground		13 428.4	.1
C ¹² *HDC ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1065	2, 2, 1← 1, 1, 0	Ground		13 429.5	
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited	3/2 5/2	13 429.80	.5
HO ¹⁶	1-	7/2, 3← 7/2, 3	Ground	3 3	13 434.62	.05
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 1, 0← 2, 0, 2	Ground		13 437.1	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₅ C ¹² N ¹⁴	4-1291	5, 0, 5← 4, 0, 4	Ground					13 437.5	.2
HO ¹⁶	1-	7/2, 3← 7/2, 3	Ground	4		4		13 441.36	.05
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁵	4- 671	4, 0, 4← 3, 1, 3	Ground					13 445.60	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	3, 1, 3← 2, 0, 2	Ground					13 447.3	
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 1, 0← 2, 0, 2	Ground					13 451.8	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					13 464.76	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Ground	3/2		5/2		13 465.77	.5
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	3, 0, ← 2, 0,	Ground					13 475.89	.5
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	3, 2, ← 2, 2,	Ground					13 477.2	.5
N ¹⁴ H ₃	4-1771	Not Reported	Ground					13 488.	
O ¹⁶ F ₂ ¹⁹	4-1611	36, 7,29←35, 8,28	Ground					13 500.68	.10
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		13 511.6	
I ¹²⁷ C ¹² N ¹⁴	4- 511	2← 1	Excited	3/2		5/2		13 527.88	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					13 528.26	.04
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	10, 6, 4←10, 6, 5	Ground					13 528.40	.2
3d-C ¹² H ₅ C ¹² N ¹⁴	4-1295	5, 2, 4← 4, 2, 3	Ground					13 529.1	.2
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	10, 6, 4←10, 6, 5	Ground					13 531.55	.2
C ¹² H ₅ F ¹⁹	4-1281	3, 2, 1← 2, 2, 0	Ground					13 539.0	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						13 542.53	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						13 557.30	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 2← 1, 1, 1	Ground	3/2		1/2		13 564.3	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		13 572.4	
O ¹⁶ F ₂ ¹⁹	4-1611	13, 2,11←14, 1,14	Ground					13 575.01	.01
O ¹⁶ F ₂ ¹⁹	4-1611	13, 2,11←14, 1,14	Ground					13 575.28	.01
O ¹⁶ F ₂ ¹⁹	4-1611	13, 2,11←14, 1, 4	Ground					13 575.51	.01
4C ¹³ -C ¹² H ₅ C ¹² N ¹⁴	4-1301	5, 2, 4← 4, 2, 3	Ground					13 578.1	.1
DN ¹⁴ O ₃ ¹⁶	3- 32	3, 2, 1← 3, 2, 2	Ground					13 579.09	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		13 585.0	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	7, 5, 2← 7, 5, 3	Ground					13 589.71	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	Not Reported	Ground	3/2		5/2		13 592.6	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	Not Reported	Ground	1/2		3/2		13 592.6	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					13 592.68	.1
c-HCl ³⁵ C ¹² :C ¹² HC ¹³⁵	4- 671	1, 1, 1← 0, 0, 0	Ground					13 600.90	
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	1, 1, 1← 0, 0, 0	Ground					13 604.08	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	7, 5, 2← 7, 5, 3	Ground					13 606.97	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 2← 1, 1, 1	Ground					13 609.29	.05
N ¹⁴ H ₃	4-1771	9, 1← 9, 1	Ground					13 612.08	.04
N ¹⁴ H ₃	4-1771	9, 1← 9, 1	Ground					13 612.36	.04
C ¹² H ₅ C ¹³ N ¹⁴	4-1293	5, 2, 4← 4, 2, 3	Ground					13 617.8	.2
N ¹⁴ H ₃	4-1771	Not Reported	Ground					13 626.	
N ¹⁴ H ₂ D	4-1773	10, 1,10←10, 0,10	Ground					13 626.80	.05
D ₂ O ₂ ¹⁶	3- 42	Not Reported						13 628.	3.
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	3, 1, ← 2, 1,	Ground					13 629.06	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						13 632.40	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 2← 1, 1, 1	Ground	3/2		1/2		13 635.9	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₂ :C ¹² DBr ⁸¹	4 726	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		13 638.4	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 4←18,14, 5	Ground	37/2		37/2		13 641.15	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 4←18,14, 5	Ground	35/2		35/2		13 641.60	.05
C ¹² D ₂ :C ¹² DBr ⁸¹	4 726	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		13 645.4	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 4←18,14, 5	Ground	37/2		37/2		13 647.31	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 4←18,14, 5	Ground	39/2		39/2		13 647.31	.05
C ¹² D ₂ :C ¹² DBr ⁸¹	4 726	Not Reported	Ground	3/2		3/2		13 647.7	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 4←18,14, 5	Ground	33/2		33/2		13 647.79	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 4←18,14, 5	Ground	35/2		35/2		13 647.79	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,15, 4←18,13, 5	Ground	37/2		37/2		13 649.58	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,15, 4←18,13, 5	Ground	35/2		35/2		13 650.09	.05
3C ¹³ -C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	5, 2, 4← 4, 2, 3	Ground					13 652.0	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 4←18,14, 5	Ground	39/2		39/2		13 653.49	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 4←18,14, 5	Ground	33/2		33/2		13 653.97	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,15, 4←18,13, 5	Ground	39/2		39/2		13 655.27	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,15, 4←18,13, 5	Ground	37/2		37/2		13 655.27	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,15, 4←18,13, 5	Ground	35/2		35/2		13 655.68	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,15, 4←18,13, 5	Ground	33/2		33/2		13 655.68	.05
N ¹⁴ H ₃	4-1771	Not Reported	Ground					13 657.	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 4←17,13, 5	Ground	35/2		35/2		13 658.73	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 4←17,13, 5	Ground	33/2		33/2		13 659.24	.05
C ₆ ¹² H ₅ Cl ³⁵	4-1271	5, 0, 5← 4, 0, 4	Ground					13 660.4	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4 725	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		13 660.5	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,15, 4←18,13, 5	Ground	39/2		39/2		13 660.85	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,15, 4←18,13, 5	Ground	33/2		33/2		13 661.24	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,14, 4←17,12, 5	Ground	35/2		35/2		13 662.75	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,14, 4←17,12, 5	Ground	33/2		33/2		13 663.27	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 4←17,13, 5	Ground	35/2		35/2		13 663.71	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 4←17,13, 5	Ground	33/2		33/2		13 664.28	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 4←17,13, 5	Ground	37/2		37/2		13 665.24	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 4←17,13, 5	Ground	31/2		31/2		13 665.81	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,14, 4←17,12, 5	Ground	35/2		35/2		13 667.71	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,14, 4←17,12, 5	Ground	33/2		33/2		13 668.23	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,14, 4←17,12, 5	Ground	37/2		37/2		13 668.90	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,14, 4←17,12, 5	Ground	31/2		31/2		13 669.39	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 4←17,13, 5	Ground	37/2		37/2		13 670.12	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 4←17,13, 5	Ground	31/2		31/2		13 670.61	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 4←16,12, 5	Ground	33/2		33/2		13 673.03	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,14, 4←17,12, 5	Ground	37/2		37/2		13 673.74	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 4←16,12, 5	Ground	31/2		31/2		13 673.74	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,14, 4←17,12, 5	Ground	31/2		31/2		13 674.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,13, 4←16,11, 5	Ground	33/2		33/2		13 674.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,13, 4←16,11, 5	Ground	31/2		31/2		13 675.04	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 4←16,12, 5	Ground	33/2		33/2		13 677.04	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 4←16,12, 5	Ground	31/2		31/2		13 677.67	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,13, 4←16,11, 5	Ground	33/2	33/2			13 678.73	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,13, 4←16,11, 5	Ground	31/2	31/2			13 679.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 4←16,12, 5	Ground	35/2	35/2			13 679.95	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 4←16,12, 5	Ground	29/2	29/2			13 680.63	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,13, 4←16,11, 5	Ground	35/2	35/2			13 681.13	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,13, 4←16,11, 5	Ground	29/2	29/2			13 681.72	.05
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			13 683.0	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 4←16,12, 5	Ground	35/2	35/2			13 683.88	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 4←16,12, 5	Ground	29/2	29/2			13 684.50	.05
2d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1294	5, 2, 4← 4, 2, 3	Ground					13 684.6	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,13, 4←16,11, 5	Ground	35/2	35/2			13 685.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,13, 4←16,11, 5	Ground	29/2	29/2			13 685.89	.05
4d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1296	5, 2, 3← 4, 2, 2	Ground					13 687.7	.2
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 2← 1, 1, 1	Ground					13 689.58	.04
N ¹⁴ H ₃	4-1771	10, 4←10, 4	Ground					13 700.96	.06
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	21,13, ←22,12,	Ground					13 715.56	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	21,13, ←22,12,	Ground					13 716.40	.1
N ¹⁴ H ₃	4-1771	12, 7←12, 7	Ground					13 719.51	.08
Cl ³⁵ O ₂ ¹⁶	4-1381	13, 2,11←14, 1,14	Ground					13 720.7	
C ¹² H ₃ Sn ¹²⁴ H ₃	3- 347	1, ← 0,	Ground					13 721.1	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 8, 4←11, 6, 5	Ground	25/2	25/2			13 723.91	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 7, 4←11, 7, 5	Ground	25/2	25/2			13 723.91	.05
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			13 724.5	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 7, 4←10, 5, 5	Ground	23/2	23/2			13 728.97	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 6, 4←10, 6, 5	Ground	23/2	23/2			13 728.97	.05
C ¹² H ₃ Sn ¹²⁰ H ₃	3- 345	1, ← 0,	Ground					13 729.81	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 6, 4←10, 6, 5	Ground	17/2	17/2			13 730.97	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 7, 4←10, 5, 5	Ground	17/2	17/2			13 730.97	.05
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 2← 1, 1, 1	Ground	3/2	3/2			13 732.7	
C ¹² H ₃ Sn ¹²⁰ H ₃	3- 345	1, ← 0,	Ground					13 735.34	
C ₆ ¹² H ₅ C ¹² N ¹⁵	4-1292	5, 2, 3← 4, 2, 2	Ground					13 736.7	.2
C ¹² H ₃ Sn ¹²² H ₃	3- 346	1, ← 0,	Ground					13 736.90	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	8, 5, 4← 8, 3, 5	Ground	19/2	19/2			13 737.52	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	8, 4, 4← 8, 4, 5	Ground	19/2	19/2			13 737.52	.05
C ¹² H ₃ Sn ¹²⁰ H ₃	3- 345	1, ← 0,	Ground					13 737.98	
2C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1298	5, 2, 4← 4, 2, 3	Ground					13 739.3	.1
C ¹² H ₃ Sn ¹²² H ₃	3- 346	1, ← 0,	Ground					13 740.01	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	8, 4, 4← 8, 4, 5	Ground	13/2	13/2			13 741.32	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	8, 5, 4← 8, 3, 5	Ground	13/2	13/2			13 741.32	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	7, 3, 4← 7, 3, 5	Ground	17/2	17/2			13 741.67	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	7, 4, 4← 7, 2, 5	Ground	17/2	17/2			13 741.67	.05
C ¹² H ₃ Sn ¹²⁴ H ₃	3- 347	1, ← 0,	Ground					13 742.56	
C ₆ ¹² H ₅ F ¹⁹	4-1281	31,10,21←31,10,22	Ground					13 746.6	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	7, 3, 4← 7, 3, 5	Ground	11/2	11/2			13 747.12	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	7, 4, 4← 7, 2, 5	Ground	11/2	11/2			13 747.12	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ Sn ¹¹⁹ H ₃	3- 344	1, ← 0,	Ground					13 747.81	
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	1, ← 0,	Ground					13 749.70	
1C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1297	5, 2, 4← 4, 2, 3	Ground					13 753.1	.1
C ¹² H ₃ C ¹² F ¹⁹ .C ¹² H ₂	3- 721	7, 5, 2← 7, 5, 3	Ground					13 753.18	.1
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	1, ← 0,	Ground					13 755.22	
C ¹² H ₃ Sn ¹²⁰ H ₃	3- 345	1, ← 0,	Ground					13 756.27	
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	1, ← 0,	Ground					13 757.87	
C ¹² H ₃ Sn ¹²⁰ H ₃	3- 345	1, ← 0,	Ground					13 759.20	
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	1, ← 0,	Ground					13 759.66	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	26,13, ←25,14,	Ground					13 759.98	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	26,13, ←25,14,	Ground					13 760.70	.1
C ¹² H ₃ Sn ¹²² H ₃	3- 346	1, ← 0,	Ground					13 761.24	
C ₆ H ₅ C ¹² N ¹⁴	4-1291	5, 2, 4← 4, 2, 3	Ground					13 763.2	.2
C ¹² H ₃ Sn ¹¹⁹ H ₃	3- 344	1, ← 0,	Ground					13 765.89	
C ¹² H ₃ Sn ¹¹⁷ H ₃	3- 343	1, ← 0,	Ground					13 767.81	
C ¹² H ₃ Sn ¹¹⁹ H ₃	3- 344	1, ← 0,	Ground					13 768.87	
C ¹² H ₃ Sn ¹¹⁶ H ₃	3- 342	1, ← 0,	Ground					13 769.94	
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	1, ← 0,	Ground					13 775.97	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		13 777.6	
C ¹² H ₃ Sn ¹¹⁶ H ₃	3- 342	1, ← 0,	Ground					13 778.22	
HC ¹³ HO ¹⁶	4- 382	2, 1, 1← 2, 1, 2	Ground					13 778.86	
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	1, ← 0,	Ground					13 778.92	
C ¹² H ₃ Sn ¹²⁰ H ₃	3- 345	1, ← 0,	Ground					13 780.72	
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1062	2, 2, 1← 1, 1, 0	Ground					13 781.8	
C ¹² H ₃ Sn ¹¹⁷ H ₃	3- 343	1, ← 0,	Ground					13 786.22	
C ¹² H ₃ Sn ¹¹⁷ H ₃	3- 343	1, ← 0,	Ground					13 789.11	
C ¹² H ₃ Sn ¹¹⁹ H ₃	3- 344	1, ← 0,	Ground					13 790.49	
C ¹² H ₃ Sn ¹¹⁶ H ₃	3- 342	1, ← 0,	Ground					13 796.43	
O ¹⁶ F ₂ ¹⁹	4-1611	29, 7,23←30, 6,24	Ground					13 797.53	.10
C ¹² H ₃ Sn ¹¹⁶ H ₃	3- 342	1, ← 0,	Ground					13 799.38	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					13 799.79	.1
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	1, ← 0,	Ground					13 800.31	
O ¹⁶ F ₂ ¹⁹	4-1611	3, 0, 3← 2, 1, 2	Ground					13 804.03	.10
C ¹² H ₃ Sn ¹¹⁷ H ₃	3- 343	1, ← 0,	Ground					13 810.73	
C ¹² H ₃ Sn ¹¹⁶ H ₃	3- 342	1, ← 0,	Ground					13 820.87	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						13 824.	3.
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁷	3- 442	5, 1, 4← 5, 0, 5	Ground					13 825.4	
HDS _e ⁸²	4-1758	9, 5, 5← 9, 5, 4	Ground					13 827.7	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		13 839.4	
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	2, 0, 2← 1, 0, 1	Ground					13 844.50	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 0, 2← 1, 1, 1	Ground					13 851.47	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground	1		0		13 852.05	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 0, 2← 1, 1, 1	Ground					13 855.30	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground	2		1		13 858.45	.2
HC ¹² N ¹⁴	4- 291	5← 5	Excited					13 861.45	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F				Frequency MHz	Acc. ±MHz
HDS ⁸⁰	4-1757	9, 5, 5← 9, 5, 4	Ground					13 862.65	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 0, 2← 1, 0, 1	Ground		3/2		3/2	13 863.9	
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	12, 6, 6←12, 6, 7	Ground					13 882.7	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 0, 2← 1, 1, 1	Ground					13 891.15	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 2← 1, 1, 1	Ground		3/2		1/2	13 892.1	
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground		3		2	13 894.5	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					13 897.60	.1
HDS ⁷⁸	4-1756	9, 5, 5← 9, 5, 4	Ground					13 899.3	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *Cl ₂ ³⁵	4-1061	2, 2, 1← 1, 1, 0	Ground					13 899.3	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 2← 1, 1, 1	Ground		1/2		1/2	13 901.6	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 2← 1, 1, 1	Ground		7/2		5/2	13 910.5	
C ¹² D ₂ :C ¹² DBr ^b	4- 732	Not Reported	Ground					13 911.7	.2
HDS ⁷⁷	4-1755	9, 5, 5← 9, 5, 4	Ground					13 918.3	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	2, 1, 1← 2, 0, 2	Ground					13 918.67	.2
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	Not Reported	Ground		3/2		3/2	13 922.7	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground					13 923.	
N ¹⁴ D ₂ H	4-1774	9, 3, 7← 9, 2, 7	Ground					13 923.95	.05
3d-C ₆ H ₅ C ¹² N ¹⁴	4-1295	5, 2, 3← 4, 2, 2	Ground					13 929.0	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					13 932.46	.04
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 0, 2← 1, 0, 1	Ground		5/2		3/2	13 933.4	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 0, 2← 1, 0, 1	Ground		7/2		5/2	13 933.4	
(C ¹² H ₃) ₂ S ³⁴	3- 602	2, 1, 1← 2, 0, 2	Ground					13 933.60	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 2← 1, 1, 1	Ground					13 936.08	.06
HDS ⁷⁶	4-1759	9, 5, 5← 9, 5, 4	Ground					13 937.8	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	Not Reported	Ground		1/2		1/2	13 938.8	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 0, 2← 1, 0, 1	Ground					13 942.31	.06
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	1, 0, 1← 0, 0, 0	Ground					13 948.05	.1
F ¹⁹ H ₂ C ₂ H ₂ Cl ³⁵	3- 441	5, 1, 4← 5, 0, 5	Ground					13 952.1	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground		4		3	13 953.6	.2
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	2, 0, 2← 1, 0, 1	Ground					13 959.01	.2
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 2← 1, 1, 1	Ground		3/2		1/2	13 963.9	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 2← 1, 1, 1	Ground		5/2		5/2	13 963.9	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	1, 0, 1← 0, 0, 0	Ground					13 968.65	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	Not Reported	Ground		5/2		5/2	13 969.6	.1
C ₆ H ₅ C ¹³ N ¹⁴	4-1293	5, 2, 3← 4, 2, 2	Ground					13 970.7	.2
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 2← 1, 1, 1	Ground		3/2		3/2	13 973.7	
N ¹⁴ H ₃	4-1771	9, 2← 9, 2	Ground					13 974.54	.08
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	1, 1, 1← 2, 0, 2	Ground		1		2	13 986.09	.10
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 2← 1, 1, 1	Ground		7/2		5/2	13 986.4	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	1, 1, 1← 2, 0, 2	Ground		2		3	13 988.28	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						13 988.41	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	1, 1, 1← 2, 0, 2	Ground		0		1	13 990.74	.10
C ¹² D ₂ :C ¹² DBr ^b	4- 732	Not Reported	Ground					14 004.9	.1
C ₆ H ₅ Cl ³⁵	4-1271	5, 2, 4← 4, 2, 3	Ground					14 005.4	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 2← 1, 1, 1	Ground		5/2		3/2	14 007.2	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ₆ ¹² H ₅ Cl ³⁵	4-1271	5, 2, 4← 4, 2, 3	Ground		14 008.3	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 0, 2← 1, 0, 1	Ground	7/2 5/2	14 015.6	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 0, 2← 1, 0, 1	Ground	5/2 3/2	14 015.6	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 2← 1, 1, 1	Ground		14 015.74	.05
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	Not Reported	Ground	1/2 1/2	14 021.0	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 0, 2← 1, 0, 1	Ground		14 022.12	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 3, 0, 3	Ground		14 025.86	.1
3C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	5, 2, 3← 4, 2, 2	Ground		14 026.5	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 3, 0, 3	Ground		14 030.68	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 0, 2← 1, 0, 1	Ground	5/2 5/2	14 031.4	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 2← 1, 1, 1	Ground	1/2 1/2	14 033.0	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		14 033.54	.04
s-C ¹² H ₂ DS ³² C ¹² H ₃	3- 604	2, 0, 2← 1, 1, 1	Ground		14 035.40	.05
C ₆ ¹² H ₅ F ¹⁹	4-1281	16, 5, 11←16, 5, 12	Ground		14 036.9	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		14 044.39	.04
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 3, 0, 3	Ground		14 047.52	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 2← 1, 1, 1	Ground	5/2 5/2	14 050.6	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		14 053.63	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 2← 1, 1, 1	Ground	3/2 3/2	14 057.3	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			14 065.4	
N ¹⁴ H ₃	4-1771	Not Reported	Ground		14 067.	
N ¹⁴ H ₂ D	4-1773	11, 1, 11←11, 0, 11	Ground		14 069.73	.05
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	2, 0, 2← 1, 0, 1	Ground		14 076.57	.2
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	1, 1, 0← 1, 0, 1	Ground		14 077.66	
C ¹² D ₃ Ge ⁷⁴ H ₃	3- 296	1, 0← 0, 0	Ground		14 077.80	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 3, 0, 3	Ground		14 084.31	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground		14 084.8	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 2← 1, 1, 1	Ground	3/2 1/2	14 085.6	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 3, 0, 3	Ground		14 087.32	.1
C ¹³ H ₃ S ³² C ¹² H ₃	3- 603	2, 1, 1← 2, 0, 2	Ground		14 090.96	.05
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 2← 1, 1, 1	Ground	1/2 1/2	14 093.1	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported			14 095.4	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		14 098.16	.1
4d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1296	5, 1, 4← 4, 1, 3	Ground		14 101.6	.2
N ¹⁴ H ₃	4-1771	Not Reported	Ground		14 102.	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 2← 1, 1, 1	Ground	5/2 3/2	14 102.4	
N ¹⁴ H ₂ D	4-1773	6, 1, 6← 6, 0, 6	Ground		14 104.32	.05
2d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1294	5, 2, 3← 4, 2, 2	Ground		14 104.5	.2
C ¹² D ₃ Ge ⁷⁴ H ₃	3- 296	1, 0← 0, 0	Ground		14 105.9	.10
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 2← 1, 1, 1	Ground	7/2 5/2	14 107.3	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		14 115.35	.1
1C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1297	5, 2, 3← 4, 2, 2	Ground		14 120.6	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground		14 121.9	
2C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1298	5, 2, 3← 4, 2, 2	Ground		14 124.8	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	3, 1, 2← 2, 1, 1	Ground		14 125.8	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² N ¹⁴	4-1291	5, 2, 3← 4, 2, 2	Ground					14 132.1	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4-746	2, 1, 2← 1, 1, 1	Ground					14 132.47	.05
C ¹² D ₂ :C ¹² DBr ⁷⁹	4-725	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		14 133.0	
C ¹² D ₃ Ge ⁷² H ₃	3-295	1, 0← 0, 0	Ground					14 134.73	.10
C ¹² D ₂ :C ¹² HBr ⁸¹	4-724	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		14 139.6	
C ¹² H ₃ S ³² H	3-221	Not Reported	Ground					14 146.3	.1
C ¹² HD:C ¹² DBr ^b	4-749	Not Reported						14 147.0	.1
C ¹² HD:C ¹² DBr ^b	4-749	Not Reported						14 149.0	.2
C ¹² H ₃ C ¹² N ¹⁵	4-1292	5, 1, 4← 4, 1, 3	Ground					14 150.7	.2
C ¹² D ₂ :C ¹² HBr ^b	4-731	Not Reported	Ground					14 152.9	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3-721	26,19, 7←26,19, 8	Ground					14 157.08	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4-744	2, 1, 2← 1, 1, 1	Ground	3/2		1/2		14 157.4	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3-721	26,19, 7←26,19, 8	Ground					14 158.38	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4-746	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		14 160.6	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4-746	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		14 170.0	.3
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3-671	2, 0, 2← 1, 0, 1	Ground					14 170.15	.2
C ¹² D ₂ :C ¹² DBr ⁸¹	4-726	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		14 183.1	
c-C ¹² HD:C ¹² DBr ⁷⁹	4-744	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		14 183.9	.1
Si ²⁸ D ₂ F ¹⁹	4-1603	2, 1, 1← 2, 0, 2	Ground					14 187.40	.10
C ¹² D ₃ Ge ⁷⁰ H ₃	3-294	1, 0← 0, 0	Ground					14 194.60	.10
C ¹² D ₂ :C ¹² HBr ^b	4-731	Not Reported	Ground					14 197.2	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4-724	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		14 207.8	
C ¹² D ₂ :C ¹² HBr ⁸¹	4-724	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		14 207.8	
c-C ¹² HD:C ¹² DBr ⁸¹	4-746	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		14 208.2	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4-723	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		14 208.7	
C ¹² H ₃ F ¹⁹	4-1281	28, 9,19←28, 9,20	Ground					14 211.7	
C ¹² D ₂ :C ¹² HBr ^b	4-731	Not Reported	Ground					14 212.1	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4-744	2, 1, 2← 1, 1, 1	Ground					14 213.95	.05
C ¹² H ₃ N ¹⁴ H ₂	3-261	Not Reported	Ground					14 215.99	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4-724	2, 0, 2← 1, 0, 1	Ground					14 216.76	.07
HC ¹² N ¹⁴	4-291	4← 4	Excited					14 224.60	.1
N ¹⁴ H ₃	4-1771	11, 6←11, 6	Ground					14 224.74	.06
C ¹² D ₂ :C ¹² DBr ⁸¹	4-726	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		14 228.0	
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground	5		4		14 231.6	.2
(C ¹² H ₃) ₂ S ³²	3-601	2, 1, 1← 2, 0, 2	Ground					14 237.62	.05
(C ¹² H ₃) ₂ S ³²	3-601	2, 1, 1← 2, 0, 2	Ground					14 237.82	.05
(C ¹² H ₃) ₂ S ³²	3-601	2, 1, 1← 2, 0, 2	Ground					14 237.88	.05
(C ¹² H ₃) ₂ S ³²	3-601	2, 1, 1← 2, 0, 2	Ground					14 238.16	.05
s-C ¹² H ₂ DS ³² C ¹² H ₃	3-604	2, 1, 1← 2, 0, 2	Ground					14 240.30	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground	4		3		14 246.7	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4-744	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		14 248.0	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4-725	Not Reported	Ground	1/2		1/2		14 248.4	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4-725	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		14 252.2	
s-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3-183	2, 1, 2← 1, 1, 1	Ground					14 256.37	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground	3		2		14 256.4	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			14 256.9	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 2← 1, 1, 1	Ground	3/2	3/2			14 259.8	.1
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	2, 0, 2← 1, 1, 1	Ground					14 261.38	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 0, 3← 2, 1, 2	Ground	2	1			14 262.5	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	7, 2, 5← 7, 2, 6	Ground					14 267.17	.35
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	7, 2, 5← 7, 2, 6	Ground					14 279.19	.35
C ¹² D ₂ :C ¹² HBr ^b	4- 731	Not Reported	Ground					14 279.5	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 1← 1, 1, 0	Ground					14 280.71	.04
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	6, 5, 1← 6, 4, 2	Ground					14 285.60	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 0, 2← 1, 0, 1	Ground	5/2	3/2			14 290.2	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			14 290.2	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	Not Reported	Ground	1/2	1/2			14 294.7	.2
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	12, 3, 9←13, 2,12	Ground	13	14			14 294.70	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	12, 3, 9←13, 2,12	Ground	11	12			14 294.70	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	12, 3, 9←13, 2,12	Ground	12	13			14 295.11	.10
C ¹² D ₂ :C ¹² DBr ^b	4- 732	Not Reported	Ground					14 297.1	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					14 300.3	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 0, 2← 1, 0, 1	Ground					14 301.72	.02
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			14 302.1	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 0, 2← 1, 0, 1	Ground	5/2	5/2			14 304.1	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			14 304.9	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 1← 1, 1, 0	Ground	3/2	1/2			14 305.9	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					14 317.6	.1
3d-C ¹² H ₅ C ¹² N ¹⁴	4-1295	5, 1, 4← 4, 1, 3	Ground					14 317.8	.2
C ¹² H ₃ S ³² H	3- 221	3, 2, 2← 2, 1, 1	Ground					14 320.2	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 1← 1, 1, 0	Ground	3/2	3/2			14 323.2	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	15,11, 4←15,11, 5	Ground					14 325.40	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	15,11, 4←15,11, 5	Ground					14 326.40	.1
C ¹² D ₂ :C ¹² DBr ^b	4- 732	Not Reported	Ground					14 331.8	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					14 339.06	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						14 340.	3.
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			14 340.4	
4C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1301	5, 1, 4← 4, 1, 3	Ground					14 340.7	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	6, 5, 1← 6, 4, 2	Ground					14 342.40	.1
C ¹² O ¹⁸ F ₂ ¹⁹	4- 213	3, 2, 1← 3, 2, 2	Ground					14 350.10	.10
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			14 355.2	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 0, 2← 1, 0, 1	Ground	3/2	3/2			14 357.9	.1
HC ¹² HO ¹⁶	4- 381	24, 4,20←24, 4,21	Ground					14 361.54	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	6, 5, 1← 6, 4, 2	Ground					14 363.37	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 1← 1, 1, 0	Ground					14 369.00	.04
N ¹⁴ H ₃	4-1771	9, 3← 9, 3	Ground					14 376.56	.06
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	2, 1, 1← 1, 1, 0	Ground					14 380.50	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 2← 1, 1, 1	Ground	1/2	1/2			14 388.4	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 391.1	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			14 394.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 182	2, 0, 2← 1, 0, 1	Ground					14 396.45	.1
C ¹² H ₅ Cl ³⁵	4-1271	5, 2, 3← 4, 2, 2	Ground					14 398.3	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 399.0	.1
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	2, 1, 1← 1, 1, 0	Ground					14 399.12	.2
C ¹² H ₅ Cl ³⁵	4-1271	5, 2, 3← 4, 2, 2	Ground					14 401.8	
C ¹² H ₃ Si ^b H ₂ D	3- 325	Not Reported						14 404.95	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		14 405.4	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		14 405.4	
C ¹² H ₃ Si ^b H ₂ D	3- 325	8, 1, 7← 8, 1, 8						14 405.90	.1
C ¹² H ₃ O ¹⁶ H	3- 211	31, 2, ←31, 1,	Ground					14 407.8	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 409.6	.4
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 417.5	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		14 420.0	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	11, 8, 3←11, 8, 4	Ground					14 427.78	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		14 427.8	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						14 428.	3.
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		14 429.9	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		14 429.9	.1
3C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1299	5, 1, 4← 4, 1, 3	Ground					14 432.3	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					14 437.67	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 0, 2← 1, 0, 1	Ground	1/2		1/2		14 437.7	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 0, 2← 1, 0, 1	Ground					14 438.20	.04
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						14 441.59	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 444.0	.2
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	2, 1, 1← 2, 0, 2	Ground					14 444.84	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		14 448.3	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 449.5	.2
D ₂ O ₂ ¹⁶	3- 42	Not Reported						14 453.	3.
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		14 454.7	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	2, 1, 1← 1, 1, 0	Ground	5/2		3/2		14 458.0	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	11, 8, 3←11, 8, 4	Ground					14 463.24	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 463.4	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		14 463.4	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		14 469.1	
C ¹² D ₂ :C ¹² HBr ^b	4- 731	Not Reported	Ground					14 474.1	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						14 475.4	
C ¹² H ₅ F ¹⁹	4-1281	19, 6,13←19, 6,14	Ground					14 475.8	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		14 477.8	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 2← 1, 1, 1	Ground					14 488.07	.06
HC ¹² HO ¹⁶	4- 381	2, 1, 1← 2, 1, 2	Ground					14 488.65	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					14 494.64	.04
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 500.9	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 1← 1, 1, 0	Ground					14 501.15	.04
HDO ₂ ¹⁶	3- 43	1, , ← 1, ,						14 503.	3.
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		14 512.9	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 0, 2← 1, 0, 1	Ground	5/2	3/2			14 512.9	.1
(C ¹² H ₃) ₂ S ³²	3- 601	10, 5, 5← 9, 6, 4	Ground					14 515.57	.05
C ₆ H ₅ F ¹⁹	4-1281	25, 8, 17←25, 8, 18	Ground					14 516.3	
(C ¹² H ₃) ₂ S ³²	3- 601	10, 5, 5← 9, 6, 4	Ground					14 517.27	.05
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 2← 1, 1, 1	Ground	3/2	1/2			14 517.5	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			14 517.5	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 517.7	.2
(C ¹² H ₃) ₂ S ³²	3- 601	10, 5, 5← 9, 6, 4	Ground					14 518.96	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			14 521.2	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 2← 1, 1, 1	Ground	1/2	1/2			14 523.2	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 0, 2← 1, 0, 1	Ground	1/2	1/2			14 523.2	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 0, 2← 1, 0, 1	Ground					14 523.38	.04
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 1← 1, 1, 0	Ground	3/2	1/2			14 525.5	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 2← 1, 1, 1	Ground	3/2	3/2			14 525.7	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 526.9	.2
2C ¹³ .C ₆ H ₅ C ¹² N ¹⁴	4-1298	5, 1, 4← 4, 1, 3	Ground					14 529.1	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 0, 2← 1, 0, 1	Ground	5/2	5/2			14 529.6	.1
HN ¹⁴ O ₃ ¹⁶	3- 31	4, 3, 1← 4, 3, 2	Ground					14 534.25	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 0, 2← 1, 0, 1	Ground	3/2	1/2			14 538.7	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			14 541.2	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 541.2	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 1← 1, 1, 0	Ground	3/2	3/2			14 543.8	
C ₆ H ₅ C ¹² N ¹⁴	4-1291	5, 1, 4← 4, 1, 3	Ground					14 545.3	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 548.2	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					14 548.4	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	13, 2, 11←14, 1, 14	Ground	23/2	25/2			14 549.5	
C ¹² D ₂ :C ¹² HBr ^b	4- 731	Not Reported	Ground					14 552.1	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						14 556.31	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			14 560.8	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			14 562.7	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground					14 566.	
a-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 184	2, 1, 2← 1, 1, 1	Ground					14 567.27	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						14 570.8	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 2← 1, 1, 1	Ground					14 571.50	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			14 574.2	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 2← 1, 1, 1	Ground	3/2	1/2			14 576.0	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	9, 6, 3← 9, 6, 4	Ground					14 577.35	
F ₂ ¹⁹ O ₂ ¹⁸	3- 13	1, 1, 0← 1, 0, 1	Ground					14 579.88	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 580.3	.2
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 1← 1, 1, 0	Ground					14 587.84	.04
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 588.75	.05
HC ¹³ HO ¹⁶	4- 382	16, 3, 13←16, 3, 14	Ground					14 592.44	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			14 596.2	.1
F ¹⁹ HC ¹² O ¹⁸	4- 274	2, 1, 2← 3, 0, 3	Ground					14 601.9	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			14 605.5	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	1, 1, 1← 0, 0, 0	Ground					14 606.97	.2
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 1← 1, 1, 0	Ground	5/2		5/2		14 612.6	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		14 615.5	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	22, 7,15←22, 7,16	Ground					14 619.2	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 2← 1, 1, 1	Ground					14 620.65	.04
Cl ³⁵ O ₂ ¹⁶	4-1381	13, 2,11←14, 1,14	Ground	25/2		27/2		14 630.9	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		14 633.0	.2
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		14 639.9	
C ¹² H ₃ S ³² H	3- 221	7, 1, 6← 7, 1, 7	Ground					14 643.1	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		14 643.5	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		14 647.9	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		14 649.4	.2
C ¹² H ₃ Si ^b HD ₂	3- 326	Not Reported						14 649.60	.2
C ¹² H ₃ Si ^b HD ₂	3- 326	8, 1, 7← 8, 1, 8						14 651.55	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 2← 1, 1, 1	Ground	3/2		1/2		14 652.0	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		14 656.3	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		14 660.0	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 660.0	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		14 662.6	.1
C ¹² H ₃ Si ^b HD ₂	3- 326	Not Reported						14 663.02	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		14 675.8	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	2, 1, 1← 1, 1, 0	Ground	5/2		3/2		14 676.3	
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	1, 1, 0← 1, 0, 1	Ground					14 676.59	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	1, 1, 0← 1, 0, 1	Ground					14 681.13	.2
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	1, 1, 1← 0, 0, 0	Ground					14 682.93	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						14 687.29	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		14 694.5	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		14 695.05	.1
C ¹² H ₃ I ¹²⁷	4- 481	1, 0← 0, 0	Ground	5/2		5/2		14 695.22	.05
C ¹² H ₃ P ³¹ H ₂	3- 271	6, 2, 4← 7, 1, 6	Ground					14 695.6	.1
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	4, 1, 3← 4, 0, 4	Ground					14 695.69	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	4, 1, 3← 4, 0, 4	Ground					14 695.75	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	4, 1, 3← 4, 0, 4	Ground					14 697.84	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						14 700.4	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 6, 3← 9, 5, 4	Ground					14 701.45	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 2← 1, 1, 1	Ground					14 704.98	.06
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 705.9	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	13, 2,11←14, 1,14	Ground	27/2		29/2		14 706.4	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 713.7	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		14 717.5	.1
O ¹⁶ F ₂ ¹⁹	4-1611	25, 3,22←26, 2,25	Ground					14 720.26	.01
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 720.4	.1
O ¹⁶ F ₂ ¹⁹	4-1611	25, 3,22←26, 2,25	Ground					14 720.63	.01
O ¹⁶ F ₂ ¹⁹	4-1611	25, 3,22←26, 2,25	Ground					14 720.93	.01
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		14 723.4	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹² HO ¹⁶	4- 381	8, 2, 6← 8, 2, 7	Ground					14 726.74	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 732.4	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 0, 2← 1, 0, 1	Ground		5/2		3/2	14 732.4	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 0, 2← 1, 0, 1	Ground		7/2		5/2	14 732.4	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	11, 8, 3←11, 8, 4	Ground					14 732.60	.1
C ₆ ² H ₅ O ¹⁶ H	3-1051	4, 0, 4← 3, 1, 3	Ground					14 733.1	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	11, 8, 3←11, 8, 4	Ground					14 733.20	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					14 739.48	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 2← 1, 1, 1	Ground		5/2		5/2	14 740.0	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 0, 2← 1, 0, 1	Ground					14 741.07	.05
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 1← 1, 1, 0	Ground					14 747.95	.04
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 2← 1, 1, 1	Ground		3/2		3/2	14 748.1	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 754.7	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					14 756.47	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .E	3- 702	2, 1, 1← 2, 0, 2						14 759.00	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	15, 7, ←14, 8,	Ground					14 760.68	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 1, 2← 1, 1, 1	Ground					14 761.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	15, 7, ←14, 8,	Ground					14 761.60	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 761.8	.2
C ¹² H ₃ S ³² H	3- 221	1, 1, ← 2, 0,	Ground					14 764.5	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .A	3- 701	2, 1, 1← 2, 0, 2						14 765.85	.2
CF ³⁵ O ₂ ¹⁶	4-1381	13, 2,11←14, 1,14	Ground		29/2		31/2	14 770.3	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 1← 1, 1, 0	Ground		5/2		5/2	14 771.0	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					14 771.22	.1
C ¹² H ₃ C ¹² HO ¹⁸	3- 479	5, 1, 4← 5, 1, 5	Ground					14 772.90	.3
HC ¹² O ¹⁶ O ¹⁸ H	3- 77	4, 1, 4← 4, 1, 3	Ground					14 773.56	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 1← 1, 1, 0	Ground		3/2		1/2	14 774.0	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 777.5	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 781.3	.2
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 2← 2, 2	Ground					14 784.75	.10
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 1, 2← 1, 1, 1	Ground					14 789.20	
C ¹² H ₂ Cl ³⁷ C ¹² N ¹⁴	4- 652	12, 1,11←11, 2,10	Ground					14 789.70	.2
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 1, 2← 1, 1, 1	Ground					14 789.91	.1
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 1← 2, 1	Ground					14 790.46	.08
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 1← 1, 1, 0	Ground		3/2		3/2	14 790.6	.1
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	3, 1, 2← 3, 0, 3	Ground					14 792.71	.05
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 1← 2, 1	Ground					14 792.80	.06
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 2← 1, 1, 1	Ground		5/2		3/2	14 793.1	.1
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 1← 2, 1	Ground					14 793.92	.08
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	3, 1, 2← 3, 0, 3	Ground					14 794.11	.05
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 2← 2, 2	Ground					14 794.66	.08
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 1← 2, 1	Ground					14 795.26	.08
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	3, 1, 2← 3, 0, 3	Ground					14 795.50	.05
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 2← 2, 2	Ground					14 796.25	.10
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 2← 2, 2	Ground					14 797.12	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 798.1	.1
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 1← 2, 1	Ground					14 799.50	.30
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	4, 1, 3← 4, 0, 4	Ground					14 799.7	.2
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		14 802.5	.1
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	3, 2← 2, 2	Ground					14 803.40	.30
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 804.8	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		14 807.8	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 2← 4, 1, 3	Ground					14 810.8	.2
C ₆ ¹² H ₅ Cl ³⁵	4-1271	5, 1, 4← 4, 1, 3	Ground					14 811.6	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 2← 4, 1, 3	Ground					14 814.2	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 814.3	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 816.0	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		14 816.1	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		14 816.1	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 2← 4, 1, 3	Ground					14 817.2	.2
N ¹⁴ H ₃	4-1771	10, 5←10, 5	Ground					14 822.70	.06
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	2, 1, 1← 1, 1, 0	Ground	5/2		3/2		14 824.1	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 0, 2← 1, 0, 1	Ground	1/2		1/2		14 825.9	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 0, 2← 1, 0, 1	Ground					14 826.14	.06
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	5, 1, 4← 5, 1, 5	Ground					14 827.5	.3
H ₂ O ₂ ¹⁶	3- 41	Not Reported						14 829.5	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		14 831.0	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 1← 1, 1, 0	Ground					14 837.07	.04
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	5, 1, 4← 5, 1, 5	Ground					14 839.05	.3
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		14 839.6	.1
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	4, 0, 4← 3, 1, 3	Ground					14 844.9	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 849.3	.1
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	7, 1, 6← 6, 2, 5	Ground	5		4		14 855.6	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						14 861.	3.
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 1← 1, 1, 0	Ground	5/2		5/2		14 864.6	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					14 865.1	.1
O ₃ ¹⁶	4-1841	23, 4,20←24, 3,21	Ground					14 866.	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	1/2		1/2		14 871.1	
HC ¹² DO ¹⁶	4- 385	13, 3,10←13, 3,11	Ground					14 873.02	
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground	7/2		5/2		14 875.4	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	7, 1, 6← 6, 2, 5	Ground	6		5		14 881.2	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					14 888.0	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		14 888.1	.1
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	2, 1, 2← 1, 1, 1	Ground					14 891.3	.05
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		14 897.3	.1
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 1, 2← 1, 1, 1	Ground					14 900.24	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						14 900.5	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		14 909.1	.2
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	4, 1, 3← 4, 0, 4	Ground					14 909.62	.05
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	7, 1, 6← 6, 2, 5	Ground	7		6		14 910.0	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					14 910.71	.04
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	4, 1, 3← 4, 0, 4	Ground					14 910.75	.05
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	1, 1, 0← 1, 0, 1	Ground					14 916.50	.35
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 918.6	.1
HC ¹² O ¹⁸ O ¹⁶ H	3- 76	4, 1, 4← 4, 1, 3	Ground					14 919.20	.1
F ¹⁹ HC ¹³ O ¹⁶	4- 273	4, 0, 4← 3, 1, 3						14 919.9	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	2, 1, 1← 1, 1, 0	Ground	5/2		3/2		14 928.0	.1
C ^b H :C ^b HBr ^b	4- 752	Not Reported	Ground	5/2		5/2		14 928.9	
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					14 929.90	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		14 934.1	.1
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2		1/2		14 934.5	
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground	3/2		3/2		14 936.7	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 937.0	.2
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	7, 1, 6← 6, 2, 5	Ground	8		7		14 939.1	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					14 941.3	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		14 942.5	.2
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	3, 1, 2← 3, 0, 3	Ground					14 943.65	.05
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 1, 2← 1, 1, 1	Ground					14 944.2	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		14 944.5	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	1, 1, 0← 0, 0, 0	Ground	1/2		3/2		14 945.25	
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	3, 1, 2← 3, 0, 3	Ground					14 949.04	.05
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	1, 1, 0← 0, 0, 0	Ground	5/2		3/2		14 949.85	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	1, 1, 0← 0, 0, 0	Ground					14 950.94	.03
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	3, 1, 2← 3, 0, 3	Ground					14 954.42	.05
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	1, 1, 0← 0, 0, 0	Ground	3/2		3/2		14 955.67	
C ¹² ₃ H ₂ C ¹³ H ₂ C ¹² ₂ Cl ³⁵ ₂	4-1068	9, 5, 5← 9, 4, 6	Ground					14 958.	
C ¹² ₃ H ₂ C ¹³ H ₂ C ¹² ₂ Cl ³⁵ ₂	4-1068	9, 6, 4← 9, 5, 5	Ground					14 958.	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	7/2		5/2		14 958.2	
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					14 961.00	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					14 961.12	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 2← 1, 1, 1	Ground	3/2		1/2		14 962.1	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 964.2	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 966.6	.1
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁵	4- 671	6, 1, 5← 6, 0, 6	Ground					14 968.41	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		14 971.4	.1
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground	5/2		3/2		14 974.3	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 976.1	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		14 979.9	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 980.1	.1
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground	1/2		1/2		14 980.8	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						14 983.7	.1
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 1, 2← 1, 1, 1	Ground					14 988.18	.05
C ¹² H ₃ P ³¹ H ₂	3- 271	6, 2, 4← 7, 1, 6	Ground					14 991.7	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 1← 1, 1, 0	Ground					14 995.68	.04
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						14 996.1	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			14 996.9	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 0, 2← 1, 0, 1	Ground	5/2	3/2			14 996.9	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 0, 2← 1, 0, 1	Ground	3/2	3/2			15 001.35	.05
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	3, 1, 2← 3, 0, 3	Ground					15 001.68	.05
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground	19/2	17/2			15 002.8	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					15 004.	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 2← 1, 1, 1	Ground					15 004.18	.06
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 004.8	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 0, 2← 1, 0, 1	Ground					15 005.28	.07
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	1, 0, 1← 0, 0, 0	Ground					15 007.91	.2
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	3, 1, 2← 3, 0, 3	Ground					15 008.56	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 016.9	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			15 017.7	.1
4d-C ¹² H ₆ C ¹² N ¹⁴	4-1296	6, 1, 6← 5, 1, 5	Ground					15 017.9	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground	21/2	19/2			15 019.1	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	Not Reported	Ground	5/2	5/2			15 022.1	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 1, 2← 1, 1, 1	Ground					15 022.38	.1
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					15 025.37	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						15 028.5	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 0, 2← 1, 0, 1	Ground					15 029.68	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 1, 2← 1, 1, 1	Ground					15 031.69	.1
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground	3/2	1/2			15 031.8	
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	2, 1, 2← 1, 1, 1	Ground					15 032.8	.05
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			15 033.5	.1
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	Not Reported	Ground	3/2	3/2			15 033.6	.2
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	7, 1, 6← 6, 2, 5	Ground	9	8			15 035.	
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground	23/2	21/2			15 035.1	
C ¹² H ₂ Cl ³⁷ C ¹² N ¹⁴	4- 652	6, 0, 6← 5, 1, 5	Ground					15 038.34	.2
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	1, 1, 1← 0, 0, 0	Ground					15 038.47	.04
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 1← 1, 1, 0	Ground	3/2	3/2			15 038.6	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 1, 2← 1, 1, 1	Ground					15 039.95	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						15 045.0	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 045.1	.3
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 047.43	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground	25/2	23/2			15 051.1	
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground	7/2	5/2			15 053.2	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 055.2	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			15 055.3	1.
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	2	3			15 058.60	.05
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	7, 1, 6← 6, 2, 5	Ground	8	7			15 059.2	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1	2			15 059.51	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	2	3			15 060.23	.05
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			15 060.3	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 060.4	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	3	4			15 061.12	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ F	3- 506	2, 1, 1← 2, 0, 2	Ground					15 061.90	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1			2	15 061.94	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1			1	15 062.65	.05
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D	3- 506	2, 1, 1← 2, 0, 2	Ground					15 063.28	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1			0	15 063.45	.05
C ₆ H ₅ C ¹² N ¹⁵	4-1292	6, 1, 6← 5, 1, 5	Ground					15 064.0	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	2			3	15 064.36	.05
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	1, 1, 1← 0, 0, 0	Ground					15 064.91	.04
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1			2	15 065.06	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	2			3	15 066.02	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	3			4	15 066.95	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1			2	15 067.55	.05
D ₂ O ₂ ¹⁶	3- 42	Not Reported						15 068.	3.
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1			1	15 068.17	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1			0	15 069.35	.05
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	2, 1, 1← 1, 1, 0	Ground	5/2			3/2	15 070.4	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 070.7	.1
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	1, 1, 1← 0, 0, 0	Ground					15 074.05	.04
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 2← 1, 1, 1	Ground	5/2			3/2	15 076.3	.1
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	Not Reported	Ground	5/2			3/2	15 076.7	
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	2, 1, 2← 1, 1, 1	Ground					15 077.69	.05
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	7, 1, 6← 6, 2, 5	Ground	7			6	15 078.4	
DC ¹² DO ¹⁶	4- 384	16, 4, 12← 16, 4, 13	Ground					15 080.34	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 1← 1, 1, 0	Ground					15 083.70	.07
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 0, 2← 1, 0, 1	Ground	5/2			3/2	15 084.1	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 0, 2← 1, 0, 1	Ground	7/2			5/2	15 084.1	.1
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	1, 1, 0← 0, 0, 0	Ground	1/2			3/2	15 088.57	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 2← 1, 1, 1	Ground					15 089.11	.06
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					15 089.3	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground					15 091.2	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	7, 1, 6← 6, 2, 5	Ground	6			5	15 093.6	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 0, 2← 1, 0, 1	Ground					15 094.31	.05
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	1, 1, 0← 0, 0, 0	Ground	5/2			3/2	15 094.42	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 094.56	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 0, 2← 1, 0, 1	Ground	5/2			5/2	15 094.8	.2
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	1, 1, 0← 0, 0, 0	Ground					15 095.94	.02
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	1, 1, 1← 0, 0, 0	Ground					15 096.36	.04
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	1, 1, 1← 0, 0, 0	Ground					15 096.93	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						15 099.30.	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						15 099.86	
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	2, 0, 2← 1, 0, 1	Ground	3/2			3/2	15 100.1	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						15 100.72	
C ¹² H ₃ I ¹²⁷	4- 481	1, 0← 0, 0	Ground	7/2			5/2	15 100.74	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						15 101.32	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	1, 1, 0← 0, 0, 0	Ground	3/2			3/2	15 101.91	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					15 102.2	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground					15 102.4	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 0, 2← 1, 0, 1	Ground		3/2		1/2	15 103.1	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						15 103.40	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					15 103.5	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						15 104.37	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	16, 3,13←16, 3,14	Ground		17		17	15 105.64	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	16, 3,13←16, 3,14	Ground		15		15	15 105.64	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	16, 3,13←16, 3,14	Ground		16		16	15 106.03	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 109.45	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground					15 109.6	.05
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 1← 1, 1, 0	Ground		5/2		5/2	15 110.0	.2
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 1, 2← 1, 1, 1	Ground		3/2		1/2	15 111.0	
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground		3/2		3/2	15 114.1	
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground					15 114.1	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 1, 1← 1, 1, 0	Ground					15 115.1	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 118.4	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					15 123.2	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 2← 1, 1, 1	Ground		5/2		5/2	15 124.7	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 2← 1, 1, 1	Ground		3/2		3/2	15 130.7	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 0, 3← 2, 1, 2	Ground		1		0	15 131.8	.2
N ¹⁴ H ₃	4-1771	Not Reported	Ground					15 132.	
3d-C ¹² H ₅ C ¹² N ¹⁴	4-1295	6, 1, 6← 5, 1, 5	Ground					15 132.1	.2
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground		7/2		5/2	15 135.0	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 1← 1, 1, 0	Ground		3/2		3/2	15 135.2	.2
C ¹² D ₃ Si ²⁸ DF ¹⁹	3- 199	2, 1, 2← 1, 1, 1	Ground					15 135.65	.1
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					15 136.42	
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 0, 3← 2, 1, 2	Ground		2		1	15 136.9	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 2← 1, 1, 1	Ground		1/2		1/2	15 139.1	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 141.72	.1
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	12,11, 1←12,11, 2	Ground					15 143.78	.10
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	4, 1, 4← 5, 0, 5	Ground					15 146.06	.02
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 146.16	.04
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground		5/2		3/2	15 151.6	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	3, 1, 2← 3, 0, 3	Ground		9/2		9/2	15 154.71	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 0, 2← 1, 0, 1	Excited		7/2		5/2	15 155.3	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	3, 1, 2← 3, 0, 3	Ground		5/2		5/2	15 157.89	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	3, 1, 2← 3, 0, 3	Ground		7/2		7/2	15 160.37	
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground		25/2		23/2	15 161.9	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 1, 2← 1, 1, 1	Ground					15 164.38	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					15 165.1	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 0, 3← 2, 1, 2	Ground		3		2	15 166.8	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		7/2		5/2	15 169.7	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	15 173.7	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 173.7	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2	3/2			15 175.7	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			15 175.8	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 175.9	.2
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	2, 1, 1← 1, 1, 0	Ground					15 176.04	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground	23/2	21/2			15 177.1	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 0, 2← 1, 0, 1	Ground					15 178.27	.07
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	4, 2, 2← 4, 2, 3	Ground					15 186.50	.2
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	2, 1, 1← 2, 0, 2	Ground					15 187.25	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground	21/2	19/2			15 189.9	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 2← 1, 1, 1	Ground	3/2	1/2			15 191.9	
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	6, 2, 4← 6, 1, 5	Ground					15 192.6	.2
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	2, 1, 1← 2, 0, 2	Ground					15 192.82	.35
N ¹⁴ H ₃	4-1771	16,12←16,12	Ground					15 193.54	.10
N ¹⁴ H ₃	4-1771	15,11←15,11	Ground					15 195.98	.10
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			15 199.15	
Cl ³⁷ O ₂ ¹⁶	4-1382	11, 2, 9←10, 3, 8	Ground	19/2	17/2			15 200.4	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 0, 2← 1, 0, 1	Ground	5/2	5/2			15 201.1	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 2← 1, 1, 1	Excited	7/2	5/2			15 202.0	
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁵	3- 441	4, 0, 4← 3, 1, 3	Ground					15 204.6	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Ground	1/2	1/2			15 206.2	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	3/2	3/2			15 207.9	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 0, 2← 1, 0, 1	Ground	3/2	1/2			15 211.2	.1
F ¹⁹ O ¹⁶ O ¹⁸	3- 12	1, 1, 0← 1, 0, 1	Ground					15 213.30	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					15 214.1	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 0, 3← 2, 1, 2	Ground	4	3			15 215.3	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			15 216.7	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	3, 1, 2← 3, 0, 3	Ground	3/2	3/2			15 229.76	
N ¹⁴ H ₃	4-1771	8, 1← 8, 1	Ground					15 233.12	.04
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	3, 1, 2← 3, 0, 3	Ground	9/2	9/2			15 233.21	
N ¹⁴ H ₃	4-1771	8, 1← 8, 1	Ground					15 233.36	.04
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	3, 1, 2← 3, 0, 3	Ground	5/2	5/2			15 237.39	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	3, 1, 2← 3, 0, 3	Ground	9/2	7/2			15 239.60	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	3, 1, 2← 3, 0, 3	Ground	5/2	7/2			15 240.14	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 2← 1, 1, 1	Ground					15 240.22	.04
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	3, 1, 2← 3, 0, 3	Ground	7/2	7/2			15 240.67	
4C ¹³ .C ₆ ¹² H ₅ .C ¹² N ¹⁴	4-1301	6, 1, 6← 5, 1, 5	Ground					15 242.5	.2
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					15 242.90	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 0, 2← 1, 0, 1	Excited	7/2	5/2			15 244.5	
HC ¹² N ¹⁵	4- 295	8← 8	Excited					15 247.1	.2
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			15 251.8	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 252.52	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						15 253.	3.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 0, 2← 1, 0, 1	Ground	3/2	3/2			15 254.6	.1
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			15 259.0	
F ₂ ¹⁹ O ₂ ¹⁸	3- 13	2, 1, 1← 2, 0, 2	Ground					15 261.76	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	9, 2, 7←10, 1,10	Ground	10	11			15 265.32	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	9, 2, 7←10, 1,10	Ground	8	9			15 265.32	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	9, 2, 7←10, 1,10	Ground	9	10			15 267.31	.10
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground	5/2	5/2			15 268.1	
N ¹⁴ H ₃	4-1771	14,10←14,10	Ground					15 268.24	.06
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	2, 1, 1← 1, 1, 0	Ground					15 268.39	.2
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 0, 2← 1, 0, 1	Ground					15 269.00	.11
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			15 269.3	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Ground	3/2	1/2			15 270.1	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 1, 1← 1, 1, 0	Ground					15 271.35	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 1, 1← 1, 1, 0	Ground					15 272.05	
C ¹² H ₃ I ¹²⁷	4- 481	1, 0← 0, 0	Ground	3/2	5/2			15 275.87	.05
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground	3/2	3/2			15 276.4	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 2← 1, 1, 1	Ground	3/2	3/2			15 278.1	
s-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 183	2, 0, 2← 1, 0, 1	Ground					15 280.53	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Excited	7/2	5/2			15 281.1	
C ₆ ¹² H ₅ C ¹³ N ¹⁴	4-1293	6, 1, 6← 5, 1, 5	Ground					15 283.5	.2
2d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1294	6, 1, 6← 5, 1, 5	Ground					15 290.0	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			15 298.0	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	2, 1, 1← 1, 1, 0	Ground					15 298.7	
3C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	6, 1, 6← 5, 1, 5	Ground					15 299.3	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 1← 1, 1, 0	Ground	1/2	1/2			15 300.8	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					15 303.4	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 305.0	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						15 309.4	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			15 315.7	
F ₂ ¹⁹ O ¹⁶ O ¹⁸	3- 12	1, 1, 0← 1, 0, 1	Ground					15 319.85	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 0, 2← 1, 0, 1	Ground	5/2	3/2			15 322.6	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			15 322.6	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 322.7	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Ground					15 326.89	.04
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 0, 2← 1, 0, 1	Ground	3/2	3/2			15 328.8	.1
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	1, 1, 1← 0, 0, 0						15 329.70	.4
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 0, 2← 1, 0, 1	Ground					15 330.96	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2	5/2			15 331.6	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					15 335.9	.1
C ¹² H ₃ S ³² H	3- 221	3, 2, 1← 2, 1, 2	Ground					15 339.0	
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					15 342.75	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 1← 1, 1, 0	Ground	3/2	1/2			15 345.5	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2	5/2			15 345.8	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	Not Reported	Ground	3/2	3/2			15 351.0	
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	2, 0, 2← 1, 0, 1	Ground					15 354.34	.06
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 357.69	.04
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 1, 1← 1, 1, 0	Ground	1/2	1/2			15 361.5	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			15 361.9	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	2, 1, 1← 1, 1, 0	Ground					15 362.32	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 363.9	.1
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	1, 1, 1← 0, 0, 0						15 364.93	.4
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		15 366.9	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		15 372.1	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		15 374.5	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 376.6	
Cl ³⁷ O ₂ ⁶	4-1382	3, 0, 3← 2, 1, 2	Ground					15 381.0	
2C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1298	6, 1, 6← 5, 1, 5	Ground					15 389.6	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	4, 1, 3← 4, 1, 4	Ground	4		4		15 390.80	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	4, 1, 3← 4, 1, 4	Ground	5		5		15 392.71	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	4, 1, 3← 4, 1, 4	Ground	3		3		15 392.88	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						15 396.55	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 397.72	.04
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 1← 1, 1, 0	Ground					15 398.28	.05
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Excited	5/2		3/2		15 399.6	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		15 406.4	
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	1, 1, 1← 0, 0, 0	Ground	3/2		3/2		15 407.90	.05
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	12,11, 1←12,11, 2	Ground					15 408.00	.10
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		15 409.8	.5
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		15 409.8	.5
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 410.0	.1
N ¹⁴ H ₃	4-1771	13, 9←13, 9	Ground					15 412.52	.06
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		15 417.1	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		15 418.4	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 1← 1, 1, 0	Ground	5/2		5/2		15 419.2	.1
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 1, 2← 1, 1, 1	Ground	3/2		1/2		15 419.7	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 0, 2← 1, 0, 1	Ground					15 419.91	.06
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 423.5	
1C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1297	6, 1, 6← 5, 1, 5	Ground					15 423.6	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		15 426.7	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		15 428.7	.2
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		15 433.9	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	6, 1, 6← 5, 1, 5	Ground					15 434.1	.2
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		15 435.8	
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	7, 4, 3← 7, 4, 4	Ground					15 438.90	.2
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		15 440.6	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		15 440.9	.1
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	7, 4, 3← 7, 4, 4	Ground					15 440.93	.2
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		15 443.6	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 0, 2← 1, 0, 1	Ground					15 443.85	.11
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					15 447.25	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						15 452.6	.1
HC ¹³ N ¹⁴	4- 293	8← 8	Excited					15 455.64	.1
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 1, 1← 1, 1, 0	Ground					15 459.59	.04

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		15 463.4	.1
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 1, 2← 1, 1, 1	Ground					15 465.40	.06
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	1, 1, 1← 0, 0, 0	Ground	1/2		3/2		15 467.68	.05
C ¹² H ₂ :C ¹² DBr ^b	4- 729	Not Reported	Ground					15 469.5	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	2, 1, 1← 1, 1, 0	Ground	5/2		3/2		15 472.4	.2
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	2, 1, 1← 1, 1, 0	Ground					15 475.34	.2
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	1, 1, 1← 0, 0, 0	Ground	5/2		3/2		15 476.73	.05
O ¹⁶ F ₂ ¹⁹	4-1611	29, 7,22←30, 6,25	Ground					15 480.54	.10
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 1, 1← 1, 1, 0	Ground	5/2		5/2		15 481.0	
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 0, 3← 2, 1, 2	Ground	5		4		15 486.3	.2
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	1, 1, 1← 0, 0, 0	Ground	3/2		3/2		15 487.73	.05
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2		1/2		15 490.5	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 1← 1, 1, 0	Ground					15 491.73	.06
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 0, 3← 2, 1, 2	Ground	4		3		15 499.2	.2
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	2, 1, 2← 1, 1, 1	Ground	3/2		1/2		15 499.7	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 0, 2← 1, 0, 1	Excited	3/2		3/2		15 499.9	
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁵	3- 441	6, 1, 5← 6, 0, 6	Ground					15 500.3	.1
C ¹² D ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 182	2, 1, 1← 1, 1, 0	Ground					15 501.59	.1
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		15 502.3	
Tl ²⁰⁵ Br ⁷⁹	1-	6← 5	Ground	15/2		13/2		15 502.55	0.10
Tl ²⁰⁵ Br ⁷⁹	1-	6← 5	Ground	13/2		11/2		15 502.55	0.10
Tl ²⁰⁵ Br ⁷⁹	1-	6← 5	Ground	11/2		9/2		15 503.79	0.20
Tl ²⁰⁵ Br ⁷⁹	1-	6← 5	Ground	9/2		7/2		15 503.79	0.20
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 0, 3← 2, 1, 2	Ground	3		2		15 507.4	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 0, 3← 2, 1, 2	Ground	2		1		15 512.4	.2
C ₆ ¹² H ₅ F ¹⁹	4-1281	4, 1, 4← 3, 1, 3	Ground					15 514.1	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		15 515.2	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 1← 1, 1, 0	Ground	5/2		5/2		15 517.0	.2
C ¹² H ₂ :C ¹² DBr ^b	4- 729	Not Reported	Ground					15 518.7	.1
C ¹² H ₂ :C ¹² DBr ^b	4- 729	Not Reported	Ground					15 522.1	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 522.3	.2
N ¹⁴ H ₃	4-1771	9, 4← 9, 4	Ground					15 523.96	.06
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		15 524.2	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		15 524.5	.1
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		15 525.3	
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	11,10, 1←11,10, 2	Ground					15 527.27	.10
C ¹² H ₃ Ge ^b Cl ³⁵ Cl ₂ ³⁷	3- 104	5, 2, 4← 4, 1, 4						15 530.	15.
4d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1296	6, 0, 6← 5, 0, 5	Ground					15 530.8	.2
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	Not Reported	Ground	5/2		3/2		15 534.3	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		15 534.7	.2
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground	1/2		1/2		15 536.3	
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					15 539.32	
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		15 540.1	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		15 543.1	.1
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	8, 2, 6← 8, 2, 7						15 547.9	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 551.0	
DN ¹⁴ O ₃ ⁶	3- 32	11, 8, 3←11, 8, 4	Ground					15 553.69	
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	2, 1, 2← 1, 1, 1	Ground					15 553.83	.06
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 1, 1← 1, 1, 0	Ground					15 553.84	.05
C ¹² H ₂ :C ¹² DBr ^b	4- 729	Not Reported	Ground					15 555.6	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	Not Reported	Ground		1/2	1/2		15 565.1	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground		1/2	1/2		15 565.1	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 1← 1, 1, 0	Ground		1/2	1/2		15 566.2	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						15 570.	3.
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 0, 2← 1, 0, 1	Excited		7/2	5/2		15 571.2	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 0, 2← 1, 0, 1	Excited		5/2	3/2		15 571.2	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Excited		3/2	3/2		15 574.7	
C ₆ H ₅ C ¹² N ¹⁵	4-1292	6, 0, 6← 5, 0, 5	Ground					15 577.6	.2
(C ¹² H ₃) ₃ C ¹² H	3-1001	1, ← 0,	Ground					15 578.9	
C ¹² D ₃ Si ^b HD ₂	3- 331	10, 1, 9←10, 1,10						15 579.07	.2
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 1, 1← 1, 1, 0	Ground		5/2	5/2		15 580.0	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	2, 1, 1← 1, 1, 0	Ground		5/2	3/2		15 580.6	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 0, 2← 1, 0, 1	Ground		7/2	5/2		15 586.5	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 0, 2← 1, 0, 1	Ground		5/2	3/2		15 586.5	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	Not Reported	Ground		3/2	3/2		15 587.4	.1
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	2, 1, 2← 1, 1, 1	Ground		5/2	5/2		15 588.3	
N ¹⁵ H ₃	4-1772	8, 3← 8, 3	Ground					15 589.75	.06
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Ground		3/2	3/2		15 590.2	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 593.1	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 0, 2← 1, 0, 1	Ground					15 594.47	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		3/2	3/2		15 598.2	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	2, 0, 2← 1, 1, 1	Ground					15 602.20	.10
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 1, 1← 1, 1, 0	Ground		3/2	3/2		15 604.9	
a-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 184	2, 0, 2← 1, 0, 1	Ground					15 606.90	.1
C ¹² H ₂ :C ¹² DBr ^b	4- 729	Not Reported	Ground					15 607.0	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 1← 1, 1, 0	Ground		3/2	1/2		15 609.0	.1
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground		7/2	5/2		15 609.8	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground		3/2	1/2		15 618.0	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground		3/2	1/2		15 618.2	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Excited		7/2	5/2		15 620.1	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited		7/2	5/2		15 620.2	.2
O ¹⁶ F ₂ ¹⁹	4-1611	11, 3, 8←12, 2,11	Ground					15 624.82	.10
N ¹⁴ O ₂ ⁶	4-1801	7, 1, 7← 8, 0, 8	Ground					15 624.90	
3d-C ₆ H ₅ C ¹² N ¹⁴	4-1295	6, 0, 6← 5, 0, 5	Ground					15 627.4	.2
HN ¹⁴ O ₃ ⁶	3- 31	10, 8, 2←10, 8, 3	Ground					15 628.19	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 631.7	.2
N ¹⁴ H ₃	4-1771	12, 8←12, 8	Ground					15 632.88	.08
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Ground		1/2	1/2		15 633.5	
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	2, 1, 1← 1, 1, 0	Ground					15 633.59	.05
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground		1/2	1/2		15 633.6	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground	7/2 5/2	15 638.2	
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground	7/2 5/2	15 638.4	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 1← 1, 1, 0	Ground	7/2 5/2	15 638.7	.1
N ¹⁴ H ₃	4-1771	8, 2← 8, 2	Ground		15 639.84	.06
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	Not Reported	Ground	7/2 5/2	15 643.4	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	2, 1, 1← 1, 1, 0	Ground	7/2 5/2	15 643.4	
N ¹⁴ O ₂ ¹⁶	4-1801	7, 1, 7← 8, 0, 8	Ground		15 653.98	
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground	5/2 5/2	15 654.8	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Excited	5/2 3/2	15 659.9	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Excited	7/2 5/2	15 659.9	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 1← 1, 1, 0	Ground		15 661.85	.04
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2 1/2	15 663.4	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground		15 663.84	.04
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ³⁵ Cl ³⁷	4-1064	4, 1, 4← 3, 0, 3	Ground		15 665.6	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Ground	7/2 5/2	15 675.3	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Ground	5/2 3/2	15 675.3	
C ¹² O ¹⁸ F ₂ ¹⁹	4- 213	2, 1, 2← 2, 1, 1	Ground		15 675.67	.10
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground	3/2 3/2	15 676.1	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 1← 1, 1, 0	Ground	5/2 5/2	15 681.5	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	19,12, ←20,11,	Ground		15 681.55	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	19,12, ←20,11,	Ground		15 682.39	.1
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 0, 2← 1, 0, 1	Ground	3/2 3/2	15 682.9	
D ₂ O ₂ ¹⁶	3- 42	Not Reported			15 684.	3.
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Ground		15 685.14	.06
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		15 686.2	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Ground	1/2 1/2	15 686.8	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 0, 2← 1, 0, 1	Ground	5/2 5/2	15 686.8	
C ₆ H ₅ Cl ³⁵	4-1271	6, 1, 6← 5, 1, 5	Ground		15 689.2	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	Not Reported	Ground	5/2 5/2	15 691.3	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground	5/2 5/2	15 691.3	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 1← 1, 1, 0	Ground	3/2 1/2	15 691.5	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground	5/2 5/2	15 691.7	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2 1/2	15 696.8	.2
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Ground	3/2 1/2	15 696.9	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 1, 1← 1, 1, 0	Ground	7/2 5/2	15 698.2	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground	3/2 3/2	15 699.5	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Excited	7/2 5/2	15 702.1	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 1← 1, 1, 0	Ground	3/2 3/2	15 704.5	.1
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground	5/2 3/2	15 707.9	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported			15 716.5	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Ground	7/2 5/2	15 720.8	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported			15 720.9	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported			15 723.9	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	28,14, ←27,15,	Ground		15 725.83	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	28,14, ←27,15,	Ground					15 725.98	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	28,14, ←27,15,	Ground					15 726.58	.1
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 1, 1← 1, 1, 0	Ground					15 726.64	.05
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	15 726.9	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 2, 1← 2, 1, 2	Ground					15 727.42	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					15 731.38	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	15 734.7	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 2← 1, 1, 1	Ground		5/2		3/2	15 737.2	
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground		5/2		3/2	15 737.3	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 1, 3← 4, 0, 4	Ground					15 738.20	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 1, 3← 4, 0, 4	Ground					15 741.10	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 1, 3← 4, 0, 4	Ground					15 742.20	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Ground					15 750.57	.04
C ¹² O ¹⁶ F ¹⁹	4- 211	11,10, 1←11,10, 2	Ground					15 752.33	.10
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	9, 3, 6← 9, 3, 7	Ground					15 753.04	.05
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 0, 2← 1, 0, 1	Ground		7/2		5/2	15 753.2	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 1← 1, 1, 0	Ground					15 754.71	.05
C ¹² H ₃ Ge ^b Cl ³⁵ Cl ³⁷	3- 105	5, 2, 4← 4, 1, 4						15 755.	15.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					15 756.36	.1
4C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1301	6, 0, 6← 5, 0, 5	Ground					15 758.6	.1
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground		3/2		3/2	15 759.5	
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 0, 2← 1, 0, 1	Ground					15 761.79	.06
O ¹⁶ F ¹⁹	4-1611	8, 2, 6← 9, 1, 9	Ground					15 771.44	.10
N ¹⁴ H ₃	4-1771	Not Reported	Ground					15 772.	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	3, 1, 3← 2, 1, 2	Ground					15 773.9	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 1, 3← 4, 0, 4	Ground					15 775.13	.1
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 1, 1← 1, 1, 0	Ground		3/2		3/2	15 777.7	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 1, 3← 4, 0, 4	Ground					15 777.87	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 1← 1, 1, 0	Ground		5/2		5/2	15 778.1	.1
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	4, 1, 3← 4, 0, 4	Ground					15 784.72	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Ground		5/2		5/2	15 784.8	
2d-C ¹² H ₅ C ¹² N ¹⁴	4-1294	6, 0, 6← 5, 0, 5	Ground					15 786.3	.2
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Ground		3/2		3/2	15 794.2	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		3/2		3/2	15 794.3	
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	6, 0, 6← 5, 1, 5	Ground					15 794.54	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 0, 2← 1, 0, 1	Ground		5/2		5/2	15 795.4	
C ¹² H ₅ C ¹³ N ¹⁴	4-1293	6, 0, 6← 5, 0, 5	Ground					15 799.9	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					15 802.28	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 1← 1, 1, 0	Ground		3/2		3/2	15 805.95	.1
3C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1299	6, 0, 6← 5, 0, 5	Ground					15 809.9	.1
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	15 815.7	
F ¹⁹ O ¹⁶	3- 11	1, 1, 0← 1, 0, 1	Excited					15 817.85	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 827.9	
DC ¹² N ¹⁵	4- 296	9← 9	Excited					15 830.90	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
DN ¹⁴ O ₃ ¹⁶	3- 32	2, 1, 1← 2, 1, 2	Ground					15 832.83	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		15 839.2	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		15 839.3	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 842.14	.04
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	2, 1, 1← 1, 1, 0	Ground	5/2		3/2		15 842.4	.2
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		15 843.4	
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		15 848.84	.05
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground	5/2		5/2		15 852.1	
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	2, 0, 2← 1, 0, 1	Ground					15 853.47	.11
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		15 857.3	
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		15 859.84	.05
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	4, 0, 4← 3, 1, 3	Ground					15 860.2	
C ¹² *D ₂ C ¹² D ₂ C ¹² *Cl ₂ ³⁵	4-1063	3, 2, 2← 2, 1, 1	Ground					15 869.4	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	3, 0, 3← 2, 1, 2	Ground					15 871.37	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		15 879.6	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		15 879.7	
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	10, 9, 1←10, 9, 2	Ground					15 881.70	.10
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -E	3- 516	2, 1, 1← 2, 0, 2	Ground					15 881.96	.35
C ¹² D ₃ Si ³⁰ DF ₂ ¹⁹	3- 202	2, 0, 2← 1, 0, 1	Ground					15 885.81	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					15 886.51	.2
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -A	3- 515	2, 1, 1← 2, 0, 2	Ground					15 887.28	.35
D ₂ O ₂ ¹⁶	3- 42	Not Reported						15 890.	3.
F ₂ ¹⁹ O ¹⁶ O ¹⁸	3- 12	2, 1, 1← 2, 0, 2	Ground					15 892.15	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						15 892.15	
C ¹² D ₃ Si ²⁹ DF ₂ ¹⁹	3- 201	2, 0, 2← 1, 0, 1	Ground					15 894.60	.2
C ¹² H ₃ Ge ⁷⁴ D ₃	3- 293	1, 0← 0, 0	Ground					15 900.15	.10
2C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1298	6, 0, 6← 5, 0, 5	Ground					15 900.6	.2
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	2, 0, 2← 1, 0, 1	Ground					15 903.16	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		15 904.5	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	1, 1, 0← 1, 0, 1	Ground					15 906.04	.1
HC ¹² DO ¹⁶	4- 385	7, 2, 5← 7, 2, 6	Ground					15 907.38	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	8, 3, ← 9, 2,	Ground					15 907.61	.1
N ¹⁵ H ₃	4-1772	9, 5← 9, 5	Ground					15 908.53	.10
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	1, 1, 0← 1, 0, 1	Ground					15 916.73	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 1← 1, 1, 0	Excited	7/2		5/2		15 920.2	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						15 921.66	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		15 932.7	
N ¹⁴ H ₃	4-1771	11, 7←11, 7	Ground					15 933.32	.06
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Excited	7/2		5/2		15 934.2	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Excited	5/2		3/2		15 934.2	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Excited	7/2		5/2		15 934.3	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					15 938.33	.2
1C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1297	6, 0, 6← 5, 0, 5	Ground					15 941.3	.1
C ¹² H ₃ Ge ⁷² D ₃	3- 292	1, 0← 0, 0	Ground					15 942.15	.10
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		15 949.5	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			15 949.5	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2	5/2			15 949.5	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	6, 0, 6← 5, 0, 5	Ground					15 951.9	.2
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2	3/2			15 955.0	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Ground	3/2	3/2			15 955.1	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 1← 1, 1, 0	Ground					15 957.28	.04
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Ground					15 958.13	.06
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 1, 1← 1, 1, 0	Ground	1/2	1/2			15 962.1	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	Not Reported	Ground	1/2	1/2			15 962.9	.2
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	5, 1, 4← 5, 1, 5	Ground					15 968.60	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					15 978.2	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			15 980.4	
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	2, 1, 2← 1, 1, 1	Ground					15 985.82	.03
C ¹² H ₃ Ge ⁷⁰ D ₃	3- 291	1, 0← 0, 0	Ground					15 985.97	.10
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	2, 1, 2← 1, 1, 1	Ground					15 987.84	.03
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	5, 1, 4← 5, 1, 5	Ground					15 988.80	.3
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 1← 1, 1, 0	Ground	3/2	1/2			15 989.0	
C ¹² H ₃ Ge ^b Cl ₃ ³⁵	3- 107	5, ← 4,						15 995.	15.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					15 999.68	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 1← 1, 1, 0	Ground	3/2	3/2			15 999.8	
4d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1296	6, 2, 5← 5, 2, 4	Ground					16 002.2	.2
N ¹⁴ O ₂ ¹⁶	4-1801	39, 3,37←40, 2,38	Ground					16 008.35	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	3/2	1/2			16 008.7	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 1← 1, 1, 0	Excited	7/2	5/2			16 010.1	
N ¹⁴ O ₂ ¹⁶	4-1801	39, 3,37←40, 2,38	Ground					16 014.05	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	1, 1, 0← 1, 0, 1	Ground					16 016.74	.1
N ¹⁴ O ₂ ¹⁶	4-1801	39, 3,37←40, 2,38	Ground					16 019.90	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			16 022.7	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2	5/2			16 023.0	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Excited	7/2	5/2			16 023.0	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Excited	5/2	3/2			16 023.0	
N ¹⁴ O ₂ ¹⁶	4-1801	39, 3,37←40, 2,38	Ground					16 023.65	
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	7, 2, 5← 7, 2, 6	Ground					16 024.25	.35
DC ¹² N ¹⁴	4- 292	6← 6	Excited					16 025.35	.1
N ¹⁴ O ₂ ¹⁶	4-1801	39, 3,37←40, 2,38	Ground					16 025.95	
N ¹⁴ O ₂ ¹⁶	4-1801	39, 3,37←40, 2,38	Ground					16 031.85	
H ₂ O ₂ ¹⁶	3- 41	Not Reported						16 032.	2.
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			16 033.4	
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	7, 2, 5← 7, 2, 6	Ground					16 035.33	.35
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	4, 1, 3← 4, 1, 4	Ground					16 037.23	.35
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2	5/2			16 037.5	
HC ¹² DO ¹⁶	4- 385	2, 1, 1← 2, 1, 2	Ground					16 038.06	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			16 038.6	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Ground	5/2	3/2			16 038.6	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			16 038.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ DGe ⁷⁴ H ₃	3- 306	1, 0, 1← 0, 0, 0	Ground					16 043.80	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						16 045.67	
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	4, 1, 3← 4, 1, 4	Ground					16 047.96	.35
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 0, 2← 1, 0, 1	Ground		5/2	5/2		16 048.1	
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground		5/2	5/2		16 048.1	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 0, 2← 1, 0, 1	Ground					16 048.11	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Ground					16 048.91	.06
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 1← 1, 1, 0	Ground					16 052.06	.05
C ₆ ¹² H ₅ C ¹² N ¹⁵	4-1292	6, 2, 5← 5, 2, 4	Ground					16 055.4	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					16 057.0	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 0, 2← 1, 0, 1	Ground					16 058.80	.1
C ¹² _* H ₂ S ^b C ¹² _* H ₂	4- 854	Not Reported						16 059.6	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					16 059.8	.1
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 1, 1← 1, 1, 0	Ground					16 061.50	.05
DN ¹⁴ O ₃ ¹⁶	3- 32	7, 5, 2← 7, 5, 3	Ground					16 065.29	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					16 066.1	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	10, 9, 1←10, 9, 2	Ground					16 071.05	.10
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -E	3- 514	2, 1, 1← 2, 0, 2	Ground					16 073.13	.35
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -A	3- 513	2, 1, 1← 2, 0, 2	Ground					16 078.66	.35
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 1← 1, 1, 0	Ground		5/2	5/2		16 079.8	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 2, 3← 5, 1, 4	Ground					16 083.2	.2
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	2, 1, 1← 1, 1, 0	Ground		5/2	5/2		16 083.6	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 2, 3← 5, 1, 4	Ground					16 085.0	.2
C ¹² D ₃ Si ²⁸ D ₃	3- 318	1, ← 0,						16 085.3	.4
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 2, 3← 5, 1, 4	Ground					16 086.8	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 088.98	.04
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	5, 3, 2← 5, 3, 3	Ground					16 089.5	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 089.84	.04
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	5, 3, 2← 5, 3, 3	Ground					16 097.6	.2
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	3, ← 2,	Ground					16 099.3	.1
C ¹² H ₂ DGe ⁷² H ₃	3- 305	1, 0, 1← 0, 0, 0	Ground					16 102.40	.10
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 1← 1, 1, 0	Ground		3/2	3/2		16 103.1	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		3/2	3/2		16 104.1	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	1, 0, 1← 0, 0, 0	Ground					16 109.59	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	1, 0, 1← 0, 0, 0	Ground					16 116.45	.5
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						16 117.91	.1
C ¹² D ₃ Si ²⁸ D ₃	3- 318	1, ← 0,						16 125.04	.3
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	1, 1, 0← 1, 0, 1	Ground					16 127.52	.1
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground		7/2	5/2		16 128.1	
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	1/2		3/2		16 129.96	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 0, 2← 1, 0, 1	Ground					16 135.85	.1
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	2, 1, 1← 1, 1, 0	Ground		5/2	3/2		16 136.6	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 0, 2← 1, 0, 1	Ground					16 138.27	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 0, 2← 1, 0, 1	Ground					16 139.49	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	2, 1, 1← 1, 1, 0	Ground		5/2	3/2		16 143.2	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹² N ¹⁴	4- 291	8← 8	Excited					16 148.55	.05
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 2, 3← 5, 1, 4	Ground					16 148.9	.2
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Excited					16 152.0	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Ground		5/2		3/2	16 156.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 0, 2← 1, 0, 1	Ground		5/2		5/2	16 156.5	.2
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	2, 1, 1← 1, 1, 0	Ground					16 156.52	.09
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	2, 0, 2← 1, 0, 1	Ground					16 157.7	.05
C ¹² D ₃ Si ²⁸ D ₃	3- 318	1, ← 0,						16 158.06	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Ground		1/2		1/2	16 158.4	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						16 161.8	.5
O ₃ ⁶	4-1841	27, 3,25←26, 4,22	Ground					16 163.	
C ¹² H ₂ DCe ⁷⁰ H ₃	3- 304	1, 0, 1← 0, 0, 0	Ground					16 163.70	.10
C ^b H ₃ Cl ^b F ^b	4- 333	Not Reported						16 166.58	.1
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	2, 2, 0← 2, 1, 1	Ground					16 168.15	.05
C ₆ ¹² H ₅ F ¹⁹	4-1281	4, 0, 4← 3, 0, 3	Ground					16 172.3	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	1/2	3/2	3/2	3/2	16 172.30	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	1/2	3/2	3/2	5/2	16 172.90	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	1/2	3/2	3/2	1/2	16 173.40	.1
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	1, 0, 1← 0, 0, 0	Ground					16 181.12	.1
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Excited					16 191.4	
3d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1295	6, 2, 5← 5, 2, 4	Ground					16 196.3	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 199.43	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Ground		3/2		1/2	16 203.7	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Ground		3/2		1/2	16 203.8	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					16 205.5	.2
DC ¹² :C ¹² C ¹² DO ¹⁶	4- 926	7, 0, 7← 6, 1, 6	Ground					16 206.27	.02
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	9, 8, 1← 9, 8, 2	Ground					16 206.91	.10
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	Not Reported	Ground		5/2		5/2	16 208.3	
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	6, 1, 5← 6, 1, 6	Ground					16 208.84	.5
C ₆ ¹² H ₅ Cl ³⁵	4-1271	6, 0, 6← 5, 0, 5	Ground					16 210.3	
HN ¹⁴ O ₃ ⁶	3- 31	3, 2, 1← 3, 2, 2	Ground					16 215.59	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 1, 2← 1, 1, 1	Ground		5/2		3/2	16 218.39	.05
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Excited		7/2		5/2	16 219.8	
C ¹² H ₂ :C ¹² HBr ^b	4- 751	Not Reported						16 224.3	.1
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	6, 1, 5← 6, 1, 6	Ground					16 224.33	.3
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Excited	3/2		3/2		16 227.73	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 228.00	
a-C ¹² H ₂ DS ³² C ¹² H ₃	3- 605	2, 0, 2← 1, 1, 1	Ground					16 228.21	.05
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Excited	15/2		13/2		16 228.26	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Excited	17/2		15/2		16 228.26	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Excited	19/2		17/2		16 228.26	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Excited	25/2		23/2		16 230.50	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Excited	23/2		21/2		16 230.50	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Excited	21/2		19/2		16 230.50	0.10
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	16 232.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	Not Reported	Ground	7/2	5/2			16 232.9	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 1← 1, 1, 0	Ground	1/2	1/2			16 233.5	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			16 237.11	.05
F ₂ ¹⁹ O ¹⁶	3- 11	1, 1, 0← 1, 0, 1	Ground					16 239.55	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 240.64	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					16 243.4	.2
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 1, 2← 1, 1, 1	Ground	3/2	1/2			16 243.64	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 0, 2← 1, 1, 1	Ground					16 246.12	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 0, 2← 1, 1, 1	Ground					16 246.27	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 0, 2← 1, 1, 1	Ground					16 246.28	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 0, 2← 1, 1, 1	Ground					16 246.45	.05
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	Not Reported	Ground	5/2	3/2			16 247.0	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 1, 2← 1, 1, 1	Ground	1/2	1/2			16 251.05	.05
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Ground					16 256.67	.04
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	2, 0, 2← 1, 0, 1	Ground					16 256.76	.03
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	2, 0, 2← 1, 0, 1	Ground					16 256.93	.03
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -E	3- 512	2, 1, 1← 2, 0, 2	Ground					16 260.44	.35
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -A	3- 511	2, 1, 1← 2, 0, 2	Ground					16 266.40	.35
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Ground	19/2	17/2			16 268.26	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Ground	17/2	15/2			16 268.26	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Ground	15/2	13/2			16 268.26	0.10
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	2, 1, 1← 2, 0, 2	Ground					16 268.84	
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Ground	25/2	23/2			16 270.38	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Ground	23/2	21/2			16 270.38	0.10
Tl ²⁰⁵ I ¹²⁷	1-	10← 9	Ground	21/2	19/2			16 270.38	0.10
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	3, 1, 2← 3, 0, 3	Ground					16 270.80	.2
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	3/2	5/2	3/2	5/2	16 273.00	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					16 273.5	.2
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	3/2	5/2	3/2	3/2	16 273.62	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	3/2	3/2	3/2	1/2	16 274.38	.1
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	2, 0, 2← 1, 0, 1	Ground					16 275.2	.05
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 509	2, 1, 1← 2, 0, 2	Ground					16 276.50	.35
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			16 278.3	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	Not Reported	Ground	5/2	5/2			16 278.4	
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 508	2, 1, 1← 2, 0, 2	Ground					16 282.62	.35
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					16 285.8	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						16 286.4	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2	1/2			16 287.6	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 1← 1, 1, 0	Ground	3/2	1/2			16 287.6	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						16 296.9	1.
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Excited	3/2	3/2			16 299.07	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Ground		3/2	3/2		16 299.2	
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground		3/2	3/2		16 299.4	.2
C ₆ ¹² H ₅ C ¹³ N ¹⁴	4-1293	6, 2, 5← 5, 2, 4	Ground					16 307.4	.2
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 1← 1, 1, 0	Excited	7/2	5/2			16 309.1	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						16 313.92	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					16 314.8	.2
N ¹⁴ H ₃	4-1771	10, 6←10, 6	Ground					16 319.38	.04
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	16 322.1	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground		7/2		5/2	16 322.1	
F ₂ ¹⁹ O ₂ ¹⁸	3- 13	3, 1, 2← 3, 0, 3	Ground					16 327.46	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Excited	7/2		5/2		16 329.72	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Excited	5/2		3/2		16 329.72	.1
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	Not Reported	Ground		5/2		3/2	16 331.4	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	16 331.4	
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	8, 1, 7← 8, 1, 8	Ground					16 338.77	.05
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	8, 1, 7← 8, 1, 8	Ground					16 339.47	.05
C ¹² H ₃ Ge ⁷⁴ HD ₂	3- 303	1, 0, 1← 0, 0, 0	Ground					16 341.2	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 342.	5.
D ₂ O ₂ ¹⁶	3- 42	Not Reported						16 344.	3.
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	3/2	5/2	3/2	5/2	16 345.38	.1
3C ¹³ -C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	6, 2, 5← 5, 2, 4	Ground					16 346.0	.2
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	3/2	3/2	3/2	3/2	16 346.17	.1
C ¹² H ₂ CF ³⁵ C ¹² N ¹⁴	4- 651	9, 2, 7←10, 1,10	Ground					16 347.33	.2
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 1← 1, 1, 0	Ground					16 350.85	.04
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	1, 1, 0← 1, 0, 1	Ground					16 353.	.5
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	9, 8, 1← 9, 8, 2	Ground					16 363.41	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 373.56	
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	5/2		3/2		16 375.43	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	7/2		5/2		16 375.43	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 1← 1, 1, 0	Ground		5/2		5/2	16 376.7	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground		5/2		5/2	16 376.8	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						16 376.94	
a-C ¹² H ₂ DC ¹² H:C ¹² H ₂	3- 742	1, 0, 1← 0, 0, 0	Ground					16 377.15	.15
2d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1294	6, 2, 5← 5, 2, 4	Ground					16 381.1	.2
HDO ₂ ¹⁶	3- 43	9, , ← 9, ,						16 382.	3.
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 1, 3← 4, 1, 4						16 382.2	
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	1/2		1/2		16 387.20	.1
C ¹² H ₃ Ge ⁷² HD ₂	3- 302	1, 0, 1← 0, 0, 0	Ground					16 388.2	.10
DC ¹³ N ¹⁴	4- 294	9← 9	Excited					16 389.63	.1
C ¹² H ₃ O ¹⁶ H	3- 211	14, , ←13, ,	Ground					16 395.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					16 395.8	5.
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	5, 1, 4← 5, 1, 5	Ground					16 399.85	.01
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 1← 1, 1, 0	Ground		3/2		3/2	16 401.8	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		3/2		3/2	16 401.8	
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	1, 0, 1← 0, 0, 0	Ground					16 407.00	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 407.48	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 410.63	.04
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 414.84	
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	3/2		5/2		16 417.0	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² ₈ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	3, 3, 1← 3, 1, 2	Excited					16 417.5	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	1, 1, 1← 0, 0, 0	Ground					16 418.82	.4
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 419.50	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						16 419.80	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Excited	7/2		5/2		16 420.97	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Excited	5/2		3/2		16 420.97	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	2, 1, 1← 2, 0, 2	Ground					16 425.54	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	2, 1, 1← 2, 0, 2	Ground					16 431.54	.2
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	2, 1, 1← 2, 0, 2	Ground					16 433.20	.2
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	13, 2,11←13, 2,12	Ground					16 433.52	.3
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Excited	1/2		1/2		16 435.3	.1
C ¹² H ₃ Ge ⁷⁰ HD ₂	3- 301	1, 0, 1← 0, 0, 0	Ground					16 437.5	.10
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		5/2		3/2	16 440.3	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	16 440.3	
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	13, 2,11←13, 2,12	Ground					16 442.90	.5
C ¹² ₈ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	3, 3, 1← 3, 1, 2	Excited					16 443.8	.1
2C ¹³ -C ¹² H ₅ C ¹² N ¹⁴	4-1298	6, 2, 5← 5, 2, 4	Ground					16 450.5	.2
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Excited	7/2		5/2		16 451.27	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Excited	5/2		3/2		16 451.27	.1
N ¹⁴ H ₃	4-1771	8, 3← 8, 3	Ground					16 455.13	.04
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	22,16, 6←22,16, 7	Ground					16 460.77	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	22,16, 6←22,16, 7	Ground					16 462.12	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	7/2		5/2		16 466.35	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	5/2		3/2		16 466.35	.1
1C ¹³ -C ¹² H ₅ C ¹² N ¹⁴	4-1297	6, 2, 5← 5, 2, 4	Ground					16 468.3	.1
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	12, 1,11←11, 2,10	Ground					16 469.00	.2
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Excited	5/2		5/2		16 473.20	.1
N ¹⁵ H ₃	4-1772	8, 4← 8, 4	Ground					16 475.23	.06
C ¹² H ₅ C ¹² N ¹⁴	4-1291	6, 2, 5← 5, 2, 4	Ground					16 480.6	.2
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	1/2		1/2		16 480.92	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						16 483.	3.
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Excited	3/2		1/2		16 486.04	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	10, 1,10← 9, 2, 7	Ground					16 487.12	.1
C ¹² ₈ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	3, 3, 1← 3, 1, 2	Ground					16 490.2	.1
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 1← 2, 0, 2	Excited					16 491.51	.1
C ¹³ H ₃ Ge ⁷⁶ H ₃	3- 289	1, 0← 0, 0	Ground					16 492.60	.10
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	10, 1,10← 9, 2, 7	Ground					16 492.71	.1
N ¹⁴ H ₃	4-1771	Not Reported	Ground					16 493.	
N ¹⁴ H ₃	4-1771	Not Reported	Ground					16 497.	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	5, 2, 3← 5, 1, 4	Ground					16 497.52	.2
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	8, 7, 1← 8, 7, 2	Ground					16 502.08	.10
C ¹³ H ₃ Ge ⁷⁴ H ₃	3- 288	1, 0← 0, 0	Ground					16 510.1	.10
C ¹³ H ₃ Ge ⁷⁴ H ₃	3- 288	1, 0← 0, 0	Ground					16 511.5	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	3/2		5/2		16 517.8	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	2← 1	Ground	5/2		5/2		16 518.62	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F' ₁	F' ₁	F		
Cl ³⁵ O ₂ ⁶	4-1381	14, 2, 13 $\leftarrow$ 13, 3, 10	Ground				31/2 29/2	16 522.4	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	28,23, 5 $\leftarrow$ 28,23, 6	Ground				55/2 55/2	16 524.58	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	28,23, 5 $\leftarrow$ 28,23, 6	Ground				57/2 57/2	16 524.58	.05
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	3, 1, 2 $\leftarrow$ 3, 0, 3	Ground					16 525.65	.10
DC ¹³ :C ¹² C ¹² HO ¹⁶	4- 917	2, 1, 2 $\leftarrow$ 1, 1, 1	Ground					16 527.51	.02
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 527.51	
a-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 204	2, 1, 2 $\leftarrow$ 1, 1, 1	Ground					16 528.39	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	28,23, 5 $\leftarrow$ 28,23, 6	Ground				59/2 59/2	16 529.17	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	28,23, 5 $\leftarrow$ 28,23, 6	Ground				53/2 53/2	16 529.17	.05
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground					16 529.90	.03
Br ⁸¹ C ¹² N ¹⁴	4- 142	2 $\leftarrow$ 1	Ground	3/2		1/2		16 531.31	.1
C ¹² O ¹⁸ F ₂ ¹⁹	4- 213	1, 0, 1 $\leftarrow$ 0, 0, 0	Ground					16 531.91	.10
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground					16 532.29	.03
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	5, 4, 1 $\leftarrow$ 5, 3, 2	Ground					16 539.43	.4
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						16 541.75	
Cl ³⁵ O ₂ ⁶	4-1381	14, 2, 13 $\leftarrow$ 13, 3, 10	Ground				29/2 27/2	16 542.1	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2 $\leftarrow$ 1	Excited	5/2		3/2		16 542.45	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2 $\leftarrow$ 1	Excited	7/2		5/2		16 542.45	.1
4d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1296	6, 2, 4 $\leftarrow$ 5, 2, 3	Ground					16 550.2	.2
C ¹³ H ₃ Ge ⁷⁴ H ₃	3- 288	1, 0 $\leftarrow$ 0, 0	Ground					16 550.20	.10
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						16 551.01	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	28,24, 5 $\leftarrow$ 28,22, 6	Ground				55/2 55/2	16 551.39	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	28,24, 5 $\leftarrow$ 28,22, 6	Ground				57/2 57/2	16 551.39	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	28,24, 5 $\leftarrow$ 28,22, 6	Ground				53/2 53/2	16 555.31	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	28,24, 5 $\leftarrow$ 28,22, 6	Ground				59/2 59/2	16 555.31	.05
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					16 556.	5.
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2 $\leftarrow$ 1	Excited	1/2		1/2		16 556.67	.1
s-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 183	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground					16 558.08	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,22, 5 $\leftarrow$ 27,22, 6	Ground				53/2 53/2	16 558.95	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,22, 5 $\leftarrow$ 27,22, 6	Ground				55/2 55/2	16 558.95	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 561.51	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,22, 5 $\leftarrow$ 27,22, 6	Ground				57/2 57/2	16 563.55	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,22, 5 $\leftarrow$ 27,22, 6	Ground				51/2 51/2	16 563.55	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,22, 5 $\leftarrow$ 27,22, 6	Ground				53/2 53/2	16 565.86	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,22, 5 $\leftarrow$ 27,22, 6	Ground				55/2 55/2	16 565.86	.05
Cl ³⁵ O ₂ ⁶	4-1381	14, 2, 13 $\leftarrow$ 13, 3, 10	Ground				27/2 25/2	16 566.7	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,22, 5 $\leftarrow$ 27,22, 6	Ground				57/2 57/2	16 570.36	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,22, 5 $\leftarrow$ 27,22, 6	Ground				51/2 51/2	16 570.36	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,23, 5 $\leftarrow$ 27,21, 6	Ground				55/2 55/2	16 574.40	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,23, 5 $\leftarrow$ 27,21, 6	Ground				53/2 53/2	16 574.40	.05
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 1 $\leftarrow$ 2, 0, 2	Ground					16 577.38	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,23, 5 $\leftarrow$ 27,21, 6	Ground				55/2 55/2	16 577.85	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,23, 5 $\leftarrow$ 27,21, 6	Ground				53/2 53/2	16 577.85	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,23, 5 $\leftarrow$ 27,21, 6	Ground				57/2 57/2	16 578.40	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,23, 5 $\leftarrow$ 27,21, 6	Ground				51/2 51/2	16 578.40	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,23, 5 $\leftarrow$ 27,21, 6	Ground		57/2		57/2	16 581.88	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	27,23, 5 $\leftarrow$ 27,21, 6	Ground		51/2		51/2	16 581.88	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 5 $\leftarrow$ 26,21, 6	Ground		51/2		51/2	16 589.19	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 5 $\leftarrow$ 26,21, 6	Ground		53/2		53/2	16 589.19	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 2,13 $\leftarrow$ 13, 3,10	Ground		25/2		23/2	16 592.7	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2 $\leftarrow$ 1	Excited	5/2		5/2		16 593.38	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 5 $\leftarrow$ 26,21, 6	Ground		49/2		49/2	16 593.72	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 5 $\leftarrow$ 26,21, 6	Ground		55/2		55/2	16 593.72	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 5 $\leftarrow$ 26,21, 6	Ground		51/2		51/2	16 595.32	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 5 $\leftarrow$ 26,21, 6	Ground		53/2		53/2	16 595.32	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,22, 5 $\leftarrow$ 26,20, 6	Ground		51/2		51/2	16 598.89	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,22, 5 $\leftarrow$ 26,20, 6	Ground		53/2		53/2	16 598.89	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 5 $\leftarrow$ 26,21, 6	Ground		49/2		49/2	16 599.81	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 5 $\leftarrow$ 26,21, 6	Ground		55/2		55/2	16 599.81	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,22, 5 $\leftarrow$ 26,20, 6	Ground		51/2		51/2	16 602.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,22, 5 $\leftarrow$ 26,20, 6	Ground		53/2		53/2	16 602.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,22, 5 $\leftarrow$ 26,20, 6	Ground		55/2		55/2	16 602.97	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,22, 5 $\leftarrow$ 26,20, 6	Ground		49/2		49/2	16 602.97	.05
Br ⁸¹ C ¹² N ¹⁴	4- 142	2 $\leftarrow$ 1	Excited	3/2		1/2		16 605.92	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,22, 5 $\leftarrow$ 26,20, 6	Ground		55/2		55/2	16 606.36	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,22, 5 $\leftarrow$ 26,20, 6	Ground		49/2		49/2	16 606.36	.05
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2 $\leftarrow$ 1	Excited	3/2		1/2		16 608.6	.1
C ₆ H ₅ C ¹² N ¹⁵	4-1292	6, 2, 4 $\leftarrow$ 5, 2, 3	Ground					16 609.9	.2
C ¹³ H ₃ Ge ⁷² H ₃	3- 287	1, 0 $\leftarrow$ 0, 0	Ground					16 610.80	.10
D ₂ O ₂ ¹⁶	3- 42	Not Reported						16 613.	3.
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 5 $\leftarrow$ 25,20, 6	Ground		51/2		51/2	16 615.68	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 5 $\leftarrow$ 25,20, 6	Ground		49/2		49/2	16 615.92	.05
C ₆ H ₅ C ¹² N ¹⁴	4-1291	6, 5, 2 $\leftarrow$ 5, 5, 1	Ground					16 616.4	.2
C ₆ H ₅ C ¹² N ¹⁴	4-1291	6, 5, 1 $\leftarrow$ 5, 5, 0	Ground					16 616.4	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 5 $\leftarrow$ 25,20, 6	Ground		53/2		53/2	16 620.20	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 5 $\leftarrow$ 25,20, 6	Ground		47/2		47/2	16 620.45	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 5 $\leftarrow$ 25,20, 6	Ground		51/2		51/2	16 620.96	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 5 $\leftarrow$ 25,20, 6	Ground		49/2		49/2	16 621.21	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,21, 5 $\leftarrow$ 25,19, 6	Ground		51/2		51/2	16 621.38	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,21, 5 $\leftarrow$ 25,19, 6	Ground		49/2		49/2	16 621.61	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	3, 0, 3 $\leftarrow$ 2, 0, 2	Ground					16 621.8	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,21, 5 $\leftarrow$ 25,19, 6	Ground		51/2		51/2	16 624.54	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,21, 5 $\leftarrow$ 25,19, 6	Ground		49/2		49/2	16 624.78	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,21, 5 $\leftarrow$ 25,19, 6	Ground		53/2		53/2	16 625.44	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 5 $\leftarrow$ 25,20, 6	Ground		53/2		53/2	16 625.44	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,21, 5 $\leftarrow$ 25,19, 6	Ground		47/2		47/2	16 625.75	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 5 $\leftarrow$ 25,20, 6	Ground		47/2		47/2	16 625.75	.05
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	8, 7, 1 $\leftarrow$ 8, 7, 2	Ground					16 628.49	.10
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,21, 5 $\leftarrow$ 25,19, 6	Ground		53/2		53/2	16 628.81	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,21, 5 $\leftarrow$ 25,19, 6	Ground		47/2		47/2	16 629.05	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ± MHz
a-C ¹² H ₂ DS ³² C ¹² H ₃	3- 605	3, 1, 2← 3, 0, 3	Ground					16 633.37	.05
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	5/2		5/2		16 638.40	.1
DC ¹² :C ¹² C ¹² DO ¹⁶	4- 926	2, 1, 2← 1, 1, 1	Ground					16 638.41	.02
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 5←24,19, 6	Ground	49/2		49/2		16 639.06	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 5←24,19, 6	Ground	47/2		47/2		16 639.36	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	6, 4, 2← 6, 4, 3	Ground					16 639.41	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,20, 5←24,18, 6	Ground	49/2		49/2		16 642.15	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,20, 5←24,18, 6	Ground	47/2		47/2		16 642.38	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,20, 5←24,18, 6	Ground	49/2		49/2		16 644.97	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,20, 5←24,18, 6	Ground	47/2		47/2		16 645.19	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,20, 5←24,18, 6	Ground	51/2		51/2		16 646.57	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,20, 5←24,18, 6	Ground	45/2		45/2		16 646.82	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 1, 7← 6, 2, 4	Ground					16 647.89	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 5←24,19, 6	Ground	51/2		51/2		16 647.94	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 5←24,19, 6	Ground	45/2		45/2		16 648.05	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 1, 7← 6, 2, 4	Ground					16 648.91	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,20, 5←24,18, 6	Ground	51/2		51/2		16 649.41	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,20, 5←24,18, 6	Ground	45/2		45/2		16 649.63	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 1, 7← 6, 2, 4	Ground					16 649.94	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	6, 4, 2← 6, 4, 3	Ground					16 651.87	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Ground	3/2		1/2		16 653.58	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 5, 2← 7, 4, 3	Ground					16 653.80	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported	Ground					16 657.45	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 5←23,18, 6	Ground	47/2		47/2		16 659.49	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 5←23,18, 6	Ground	45/2		45/2		16 659.86	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,19, 5←23,17, 6	Ground	47/2		47/2		16 660.96	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,19, 5←23,17, 6	Ground	45/2		45/2		16 661.14	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 661.73	.04
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 5←23,18, 6	Ground	47/2		47/2		16 663.09	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 5←23,18, 6	Ground	45/2		45/2		16 663.35	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,19, 5←23,17, 6	Ground	45/2		45/2		16 663.76	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 5←23,18, 6	Ground	49/2		49/2		16 664.29	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 5←23,18, 6	Ground	43/2		43/2		16 664.56	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,19, 5←23,17, 6	Ground	49/2		49/2		16 665.55	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,19, 5←23,17, 6	Ground	43/2		43/2		16 665.82	.05
C ¹² C ¹³ ₃ C ¹² N ¹⁴	4- 581	5, ← 4,	Ground					16 667.	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 5←23,18, 6	Ground	49/2		49/2		16 667.74	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 5←23,18, 6	Ground	43/2		43/2		16 667.99	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,19, 5←23,17, 6	Ground	49/2		49/2		16 667.99	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,19, 5←23,17, 6	Ground	43/2		43/2		16 668.31	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 670.02	.04
C ¹³ H ₃ Ge ⁷⁰ H ₃	3- 286	1, 0← 0, 0	Ground					16 674.75	.10
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,18, 5←22,16, 6	Ground	45/2		45/2		16 680.13	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 5←22,17, 6	Ground	45/2		45/2		16 680.39	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,18, 5←22,16, 6	Ground	43/2		43/2		16 680.39	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 5←22,17, 6	Ground	43/2		43/2		16 680.63	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	15, 5, ←16, 4,	Ground					16 681.80	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	12, 2,10←12, 2,11	Ground					16 682.08	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 5←22,17, 6	Ground	47/2		47/2		16 682.54	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,18, 5←22,16, 6	Ground	47/2		47/2		16 682.54	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,18, 5←22,16, 6	Ground	41/2		41/2		16 682.87	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 5←22,17, 6	Ground	41/2		41/2		16 682.87	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,18, 5←22,16, 6	Ground	47/2		47/2		16 684.93	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 5←22,17, 6	Ground	47/2		47/2		16 685.19	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,18, 5←22,16, 6	Ground	41/2		41/2		16 685.19	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 5←22,17, 6	Ground	41/2		41/2		16 685.46	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 689.	5.
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	3, 1, 2← 3, 0, 3	Excited					16 689.30	.10
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 2, 1← 3, 1, 2	Ground					16 690.0	.5
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	6, 3, 3← 5, 3, 2	Ground					16 694.3	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						16 698.20	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 1← 2, 0, 2	Ground					16 700.24	.1
HN ¹⁴ O ₃ ¹⁶	3- 31	3, 2, 1← 3, 1, 2	Ground					16 700.74	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	18, 5,13←18, 4,14	Ground	33/2		33/2		16 704.418	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	18, 5,13←18, 4,14	Ground	39/2		39/2		16 704.418	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	4, 1, 3← 4, 0, 4	Ground	5/2		5/2		16 705.23	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	18, 5,13←18, 4,14	Ground	37/2		37/2		16 705.627	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	18, 5,13←18, 4,14	Ground	35/2		35/2		16 705.627	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,16, 5←20,14, 6	Ground	41/2		41/2		16 705.82	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,16, 5←20,14, 6	Ground	39/2		39/2		16 706.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 5←20,15, 6	Ground	41/2		41/2		16 707.06	.05
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	4, 1, 3← 4, 0, 4	Ground	11/2		11/2		16 707.20	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 5←20,15, 6	Ground	39/2		39/2		16 707.45	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,16, 5←20,14, 6	Ground	41/2		41/2		16 708.04	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,16, 5←20,14, 6	Ground	39/2		39/2		16 708.44	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 5←20,15, 6	Ground	41/2		41/2		16 708.90	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 5←20,15, 6	Ground	39/2		39/2		16 709.30	.05
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	4, 1, 3← 4, 0, 4	Ground	7/2		7/2		16 710.90	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,16, 5←20,14, 6	Ground	43/2		43/2		16 711.15	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,16, 5←20,14, 6	Ground	37/2		37/2		16 711.55	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 5←20,15, 6	Ground	43/2		43/2		16 712.50	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 5←20,15, 6	Ground	37/2		37/2		16 712.76	.05
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	4, 1, 3← 4, 0, 4	Ground	9/2		9/2		16 712.87	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Excited	5/2		5/2		16 712.9	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,16, 5←20,14, 6	Ground	43/2		43/2		16 713.39	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,16, 5←20,14, 6	Ground	37/2		37/2		16 713.73	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 5←20,15, 6	Ground	43/2		43/2		16 714.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 5←20,15, 6	Ground	37/2		37/2		16 714.65	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,15, 5←19,13, 6	Ground	39/2		39/2		16 717.31	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,15, 5←19,13, 6	Ground	37/2		37/2		16 717.75	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,14, 5←19,14, 6	Ground	39/2		39/2		16 719.06	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,14, 5←19,14, 6	Ground	37/2		37/2		16 719.53	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,15, 5←19,13, 6	Ground	39/2		39/2		16 719.53	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,15, 5←19,13, 6	Ground	37/2		37/2		16 719.98	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,14, 5←19,14, 6	Ground	39/2		39/2		16 720.59	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,14, 5←19,14, 6	Ground	37/2		37/2		16 721.05	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	17, 8, ←16, 9,	Ground					16 721.31	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 721.81	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	17, 8, ←16, 9,	Ground					16 722.23	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,15, 5←19,13, 6	Ground	41/2		41/2		16 723.04	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,15, 5←19,13, 6	Ground	35/2		35/2		16 723.52	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,14, 5←19,14, 6	Ground	41/2		41/2		16 724.80	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,15, 5←19,13, 6	Ground	41/2		41/2		16 725.24	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,14, 5←19,14, 6	Ground	35/2		35/2		16 725.24	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,15, 5←19,13, 6	Ground	35/2		35/2		16 725.70	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,14, 5←19,14, 6	Ground	41/2		41/2		16 726.29	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	19,14, 5←19,14, 6	Ground	35/2		35/2		16 726.71	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,13, 5←18,13, 6	Ground	37/2		37/2		16 727.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 5←18,12, 6	Ground	37/2		37/2		16 727.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,13, 5←18,13, 6	Ground	35/2		35/2		16 727.80	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 5←18,12, 6	Ground	35/2		35/2		16 727.80	.05
Br ⁷⁹ C ¹² N ¹⁴	4- 141	2← 1	Excited	3/2		1/2		16 727.97	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 5←18,12, 6	Ground	37/2		37/2		16 730.71	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,13, 5←18,13, 6	Ground	37/2		37/2		16 730.71	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,13, 5←18,13, 6	Ground	35/2		35/2		16 731.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 5←18,12, 6	Ground	35/2		35/2		16 731.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 5←18,12, 6	Ground	39/2		39/2		16 733.47	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,13, 5←18,13, 6	Ground	39/2		39/2		16 733.47	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 5←18,12, 6	Ground	33/2		33/2		16 733.96	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,13, 5←18,13, 6	Ground	33/2		33/2		16 733.96	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,13, 5←18,13, 6	Ground	39/2		39/2		16 736.85	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 5←18,12, 6	Ground	39/2		39/2		16 736.85	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,14, 5←18,12, 6	Ground	33/2		33/2		16 737.38	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	18,13, 5←18,13, 6	Ground	33/2		33/2		16 737.38	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,12, 5←17,12, 6	Ground	35/2		35/2		16 738.29	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 5←17,11, 6	Ground	35/2		35/2		16 738.29	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 5←17,11, 6	Ground	33/2		33/2		16 738.84	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,12, 5←17,12, 6	Ground	33/2		33/2		16 738.84	.05
DC ¹² N ¹⁴	4- 292	9← 9	Excited					16 739.42	.03
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 5←17,11, 6	Ground	35/2		35/2		16 739.50	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,12, 5←17,12, 6	Ground	35/2		35/2		16 739.50	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 5←17,11, 6	Ground	33/2		33/2		16 740.00	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,12, 5←17,12, 6	Ground	33/2		33/2		16 740.00	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	1, 1, 1← 0, 0, 0	Ground					16 741.72	.4
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	3, 1, 3← 3, 1, 2	Ground					16 742.4	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,12, 5←17,12, 6	Ground		37/2		37/2	16 742.70	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 5←17,11, 6	Ground		37/2		37/2	16 742.70	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 742.98	.04
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 1, 3← 4, 0, 4	Ground					16 743.0	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,12, 5←17,12, 6	Ground		31/2		31/2	16 743.13	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 5←17,11, 6	Ground		31/2		31/2	16 743.13	.05
C ¹² D ₃ Si ^b HD ₂	3- 331	1, 0, 1← 0, 0, 0						16 743.20	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,12, 5←17,12, 6	Ground		37/2		37/2	16 745.03	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 5←17,11, 6	Ground		37/2		37/2	16 745.03	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,13, 5←17,11, 6	Ground		31/2		31/2	16 745.69	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	17,12, 5←17,12, 6	Ground		31/2		31/2	16 745.69	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 5←16,10, 6	Ground		33/2		33/2	16 745.69	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,11, 5←16,11, 6	Ground		33/2		33/2	16 745.69	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 5←16,10, 6	Ground		31/2		31/2	16 746.44	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,11, 5←16,11, 6	Ground		31/2		31/2	16 746.44	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 1, 3← 4, 0, 4	Ground					16 753.0	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 5←16,10, 6	Ground		35/2		35/2	16 753.14	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,11, 5←16,11, 6	Ground		35/2		35/2	16 753.14	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,12, 5←16,10, 6	Ground		29/2		29/2	16 753.84	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,11, 5←16,11, 6	Ground		29/2		29/2	16 753.84	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 1, 3← 4, 0, 4	Ground					16 755.0	.2
DC ¹² DO ¹⁶	4- 384	6, 2, 4← 6, 2, 5	Ground					16 759.64	
s-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 203	2, 1, 2← 1, 1, 1	Ground					16 763.72	.2
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	7, 6, 1← 7, 6, 2	Ground					16 766.23	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						16 767.90	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	6, 2, 5← 5, 2, 4	Ground					16 769.3	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	6, 2, 5← 5, 2, 4	Ground					16 771.2	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	13, 8, 5←13, 8, 6	Ground		23/2		23/2	16 773.02	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	13, 9, 5←13, 7, 6	Ground		23/2		23/2	16 773.02	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 7, 5←12, 7, 6	Ground		27/2		27/2	16 773.67	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 8, 5←12, 6, 6	Ground		27/2		27/2	16 773.67	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 8, 5←12, 6, 6	Ground		21/2		21/2	16 775.09	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 7, 5←12, 7, 6	Ground		21/2		21/2	16 775.09	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17, 5,12←17, 4,13	Ground		31/2		31/2	16 776.724	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17, 5,12←17, 4,13	Ground		37/2		37/2	16 776.724	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 7, 5←12, 7, 6	Ground		27/2		27/2	16 776.75	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 8, 5←12, 6, 6	Ground		27/2		27/2	16 776.75	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 8, 5←12, 6, 6	Ground		27/2		27/2	16 777.84	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 7, 5←12, 7, 6	Ground		27/2		27/2	16 777.84	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17, 5,12←17, 4,13	Ground		35/2		35/2	16 778.048	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17, 5,12←17, 4,13	Ground		33/2		33/2	16 778.048	
C ¹² H ₃ C ¹² F ¹⁹ .C ¹² H ₂	3- 721	6, 4, 2← 6, 4, 3	Ground					16 778.12	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 8, 5←12, 6, 6	Ground		21/2		21/2	16 778.19	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 7, 5←12, 7, 6	Ground		21/2		21/2	16 778.19	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 8, 5←12, 6, 6	Ground		21/2		21/2	16 779.21	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 7, 5←12, 7, 6	Ground	21/2	21/2			16 779.21	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 7, 5←11, 5, 6	Ground	25/2	25/2			16 781.11	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 6, 5←11, 6, 6	Ground	25/2	25/2			16 781.11	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 7, 5←11, 5, 6	Ground	19/2	19/2			16 782.95	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 6, 5←11, 6, 6	Ground	19/2	19/2			16 782.95	.05
C ¹² D ₃ Si ^b HD ₂	3- 331	1, 0, 1← 0, 0, 0						16 783.88	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 6, 5←10, 4, 6	Ground	23/2	23/2			16 785.12	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 5, 5←10, 5, 6	Ground	23/2	23/2			16 785.12	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 2, 5← 5, 3, 2	Ground					16 786.62	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 2, 5← 5, 3, 2	Ground					16 786.96	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 6, 5←10, 4, 6	Ground	17/2	17/2			16 787.50	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 5, 5←10, 5, 6	Ground	17/2	17/2			16 787.50	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	9, 5, 5← 9, 3, 6	Ground	21/2	21/2			16 788.91	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	9, 4, 5← 9, 4, 6	Ground	21/2	21/2			16 788.91	.05
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	5, 1, 4← 5, 0, 5	Ground					16 791.92	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	9, 5, 5← 9, 3, 6	Ground	15/2	15/2			16 792.16	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	9, 4, 5← 9, 4, 6	Ground	15/2	15/2			16 792.16	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					16 796.4	.1
DC ¹³ :C ¹² C ¹² HO ¹⁶	4- 917	2, 0, 2← 1, 0, 1	Ground					16 796.64	.02
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	7, 2, 5← 7, 2, 6	Ground	17/2	17/2			16 797.27	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	7, 3, 5← 7, 1, 6	Ground	17/2	17/2			16 797.27	.05
N ¹⁴ H ₃	4-1771	9, 5← 9, 5	Ground					16 798.22	.04
D ₂ O ₂ ¹⁶	3- 42	Not Reported						16 803.	3.
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	7, 3, 5← 7, 1, 6	Ground	11/2	11/2			16 803.68	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	7, 2, 5← 7, 2, 6	Ground	11/2	11/2			16 803.68	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 807.	5.
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	3, 1, 2← 3, 0, 3	Ground					16 807.95	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 1← 2, 0, 2	Ground					16 822.03	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 823.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² *CF ³⁵ Cl ³⁷	4-1062	4, 1, 4← 3, 0, 3	Ground					16 826.1	
s-C ¹² H ₂ DC ¹² H:C ¹² H ₂	3- 743	1, 0, 1← 0, 0, 0	Ground					16 832.90	.15
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16, 5,11←16, 4,12	Ground	29/2	29/2			16 833.360	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	18, 5,14←18, 4,15	Ground	33/2	33/2			16 833.536	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	18, 5,14←18, 4,15	Ground	39/2	39/2			16 833.536	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	18, 5,14←18, 4,15	Ground	35/2	35/2			16 834.744	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	18, 5,14←18, 4,15	Ground	37/2	37/2			16 834.835	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16, 5,11←16, 4,12	Ground	31/2	31/2			16 834.835	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16, 5,11←16, 4,12	Ground	33/2	33/2			16 834.975	
N ¹⁴ H ₃	4-1771	7, 1← 7, 1	Ground					16 840.95	.04
N ¹⁴ H ₃	4-1771	7, 1← 7, 1	Ground					16 841.16	.04
4C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1301	6, 2, 4← 5, 2, 3	Ground					16 843.6	.2
3d-C ¹² H ₅ C ¹² N ¹⁴	4-1295	6, 2, 4← 5, 2, 3	Ground					16 859.0	.2
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	4, 1, 3← 4, 0, 4	Ground	5/2	5/2			16 860.48	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17, 5,13←17, 4,14	Ground	37/2	37/2			16 860.600	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17, 5,13←17, 4,14	Ground	31/2	31/2			16 860.600	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17, 5,13←17, 4,14	Ground	35/2		35/2		16 861.904	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17, 5,13←17, 4,14	Ground	33/2		33/2		16 861.904	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	4, 1, 3← 4, 0, 4	Ground	11/2		11/2		16 863.18	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	7, 6, 1← 7, 6, 2	Ground					16 865.76	.10
4d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1296	6, 1, 5← 5, 1, 4	Ground					16 866.1	.2
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	4, 1, 3← 4, 0, 4	Ground	7/2		7/2		16 868.13	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	4, 1, 3← 4, 0, 4	Ground	9/2		9/2		16 870.66	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported	Ground					16 870.93	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15, 5,10←15, 4,11	Ground	27/2		27/2		16 877.773	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15, 5,10←15, 4,11	Ground	33/2		33/2		16 877.868	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15, 5,10←15, 4,11	Ground	29/2		29/2		16 879.408	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15, 5,10←15, 4,11	Ground	31/2		31/2		16 879.560	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16, 5,12←16, 4,13	Ground	35/2		35/2		16 886.162	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16, 5,12←16, 4,13	Ground	33/2		33/2		16 887.64	
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 5← 6, 4, 2	Ground					16 892.80	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 5← 6, 4, 2	Ground					16 894.33	.05
C ₆ ¹² H ₅ C ¹³ N ¹⁴	4-1293	6, 2, 4← 5, 2, 3	Ground					16 897.4	.2
DC ¹² :C ¹² C ¹³ HO ¹⁶	4- 919	2, 1, 2← 1, 1, 1	Ground					16 900.92	.02
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15, 5,11←15, 4,12	Ground	27/2		27/2		16 909.88	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15, 5,11←15, 4,12	Ground	33/2		33/2		16 910.044	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					16 911.46	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15, 5,11←15, 4,12	Ground	29/2		29/2		16 911.524	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15, 5,11←15, 4,12	Ground	31/2		31/2		16 911.660	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 5, 9←14, 4,10	Ground	25/2		25/2		16 912.140	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 5, 9←14, 4,10	Ground	31/2		31/2		16 912.340	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ .E	3- 196	2, 1, 2← 1, 1, 1	Ground					16 912.91	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 195	2, 1, 2← 1, 1, 1	Ground					16 912.91	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported	Ground					16 913.79	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 5, 9←14, 4,10	Ground	27/2		27/2		16 914.020	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 5, 9←14, 4,10	Ground	29/2		29/2		16 914.222	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 915.	5.
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	2, 1, 2← 1, 1, 1	Ground					16 918.5	.1
a-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 184	2, 1, 1← 1, 1, 0	Ground					16 920.42	.1
C ₆ ¹² H ₅ C ¹² N ¹⁵	4-1292	6, 1, 5← 5, 1, 4	Ground					16 924.1	.2
s-C ¹² HD ₂ C ¹² HO ¹⁶	3- 475	7, 1, 6← 7, 1, 7	Ground					16 926.85	.2
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 5,10←14, 4,11	Ground	25/2		25/2		16 931.000	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 5,10←14, 4,11	Ground	31/2		31/2		16 931.168	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 5,10←14, 4,11	Ground	29/2		29/2		16 932.868	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 5,10←14, 4,11	Ground	27/2		27/2		16 933.016	
DC ¹² :C ¹³ C ¹² HO ¹⁶	4- 918	2, 1, 2← 1, 1, 1	Ground					16 934.38	.02
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	6, 4, 2← 6, 4, 3	Ground					16 935.00	.2
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .E	3- 702	3, 1, 2← 3, 0, 3						16 936.38	.2
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						16 938.2	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 5, 8←13, 4, 9	Ground	23/2		23/2		16 938.654	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 5, 8←13, 4, 9	Ground	29/2		29/2		16 938.915	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 5, 8←13, 4, 9	Ground	25/2		25/2		16 940.860	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 5, 8←13, 4, 9	Ground	27/2		27/2		16 941.040	
C ¹² H ₃ O ¹⁶ H	3- 211	30, 2, ←30, 1,	Ground					16 941.6	.1
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 1← 2, 0, 2	Ground					16 944.86	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	3, 1, 2← 3, 0, 3						16 945.20	.2
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	11, 4, 7←11, 3, 8	Ground					16 945.3	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	17, 4, ←16, 5,	Ground					16 947.65	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					16 948.	5.
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 5, 9←13, 4,10	Ground	23/2		23/2		16 949.266	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 5, 9←13, 4,10	Ground	29/2		29/2		16 949.451	
F ₂ ¹⁹ O ¹⁶ O ¹⁸	3- 12	3, 1, 2← 3, 0, 3	Ground					16 950.37	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 5, 9←13, 4,10	Ground	25/2		25/2		16 951.413	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 5, 9←13, 4,10	Ground	27/2		27/2		16 951.602	
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	Not Reported	Ground					16 952.9	
s-C ¹² HD ₂ C ¹² HO ¹⁶	3- 475	1, 0, 1← 0, 0, 0	Ground					16 953.90	.2
C ₆ ¹² H ₅ Cl ³⁵	4-1271	6, 3, 4← 5, 3, 3	Ground					16 954.9	
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	2, 1, 2← 1, 1, 1	Ground					16 955.5	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12, 5, 7←12, 4, 8	Ground	27/2		27/2		16 959.161	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12, 5, 7←12, 4, 8	Ground	21/2		21/2		16 959.161	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	6, 3, 4← 5, 3, 3	Ground					16 959.3	
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	6, 2, 5← 7, 1, 6	Ground	5		6		16 960.96	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	6, 2, 5← 7, 1, 6	Ground	6		7		16 960.96	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	6, 2, 5← 7, 1, 6	Ground	7		8		16 960.96	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12, 5, 7←12, 4, 8	Ground	23/2		23/2		16 961.692	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12, 5, 7←12, 4, 8	Ground	25/2		25/2		16 961.692	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12, 5, 8←12, 4, 9	Ground	21/2		21/2		16 964.803	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12, 5, 8←12, 4, 9	Ground	27/2		27/2		16 964.803	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12, 5, 8←12, 4, 9	Ground	25/2		25/2		16 967.329	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12, 5, 8←12, 4, 9	Ground	23/2		23/2		16 967.329	
3C ¹³ -C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	6, 2, 4← 5, 2, 3	Ground					16 970.1	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	1, 1, 0← 0, 0, 0	Ground					16 971.79	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	6, 4, 2← 6, 4, 3	Ground					16 972.60	.2
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 5, 6←11, 4, 7	Ground	19/2		19/2		16 974.173	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 5, 6←11, 4, 7	Ground	25/2		25/2		16 974.578	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		16 976.8	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 5, 6←11, 4, 7	Ground	21/2		21/2		16 977.300	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 5, 6←11, 4, 7	Ground	23/2		23/2		16 977.300	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 5, 7←11, 4, 8	Ground	23/2		23/2		16 977.300	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 5, 7←11, 4, 8	Ground	21/2		21/2		16 977.300	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 5, 7←11, 4, 8	Ground	25/2		25/2		16 980.100	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 5, 7←11, 4, 8	Ground	19/2		19/2		16 980.100	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	6, 4, 2← 6, 4, 3	Ground					16 980.58	.1
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	9, 1, 8← 9, 1, 9	Ground					16 980.97	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 5, 0← 5, 4, 1	Ground					16 984.60	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	10, 5, 5←10, 4, 6	Ground	17/2		17/2		16 985.587	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	10, 5, 5←10, 4, 6	Ground	23/2		23/2		16 985.935	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	10, 5, 6←10, 4, 7	Ground	17/2		17/2		16 986.850	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	10, 5, 6←10, 4, 7	Ground	23/2		23/2		16 987.192	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	Not Reported						16 989.	5.
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	10, 5, 5←10, 4, 6	Ground	19/2		19/2		16 989.107	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	10, 5, 5←10, 4, 6	Ground	21/2		21/2		16 989.580	
s-C ¹² HD ₂ C ¹² HO ¹⁶	3- 475	1, 0, 1← 0, 0, 0	Ground					16 990.04	.2
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	10, 5, 6←10, 4, 7	Ground	19/2		19/2		16 990.473	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	10, 5, 6←10, 4, 7	Ground	21/2		21/2		16 990.883	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 5, 4← 9, 4, 5	Ground	15/2		15/2		16 993.723	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 5, 4← 9, 4, 5	Ground	21/2		21/2		16 994.217	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 5, 5← 9, 4, 6	Ground	15/2		15/2		16 994.217	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 5, 5← 9, 4, 6	Ground	21/2		21/2		16 994.723	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	6, 3, 3← 5, 3, 2	Ground					16 996.5	
Cl ³⁵ O ₂ ¹⁶	4-1381	14, 2,13←13, 3,10	Ground					16 997.1	
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	2, 1, 2← 1, 1, 1	Ground					16 997.90	.02
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 5, 4← 9, 4, 5	Ground	17/2		17/2		16 998.066	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 5, 4← 9, 4, 5	Ground	19/2		19/2		16 998.648	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 5, 5← 9, 4, 6	Ground	17/2		17/2		16 998.648	
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	6, 5, 1← 6, 5, 2	Ground					16 998.78	.10
C ₆ ¹² H ₅ Cl ³⁵	4-1271	6, 3, 3← 5, 3, 2	Ground					17 001.3	
C ¹² H ₂ Cl ³⁷ C ¹² N ¹⁴	4- 652	9, 2, 7←10, 1,10	Ground					17 004.60	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		17 007.76	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						17 008.	1.
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	7, 5, 2← 7, 4, 3	Ground	13/2		13/2		17 009.238	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	7, 5, 2← 7, 4, 3	Ground	15/2		15/2		17 011.164	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	6, 5, 1← 6, 4, 2	Ground	11/2		11/2		17 013.200	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	5, 5, 0← 5, 4, 1	Ground	9/2		9/2		17 015.432	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	6, 5, 1← 6, 4, 2	Ground	13/2		13/2		17 015.432	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						17 018.35	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	5, 5, 0← 5, 4, 1	Ground	11/2		11/2		17 019.765	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						17 020.5	.5
HC ¹² HO ¹⁶	4- 381	16, 3,13←16, 3,14	Ground					17 027.60	
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	2, 1, 2← 1, 0, 1	Ground					17 030.50	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		17 033.75	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		17 034.84	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 042.46	.04
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	2, 1, 2← 1, 0, 1	Ground					17 046.5	.2
(C ¹² H ₃) ₂ S ³²	3- 601	6, 1, 6← 5, 2, 3	Ground					17 047.35	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 1, 6← 5, 2, 3	Ground					17 047.37	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 1, 6← 5, 2, 3	Ground					17 048.23	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 1, 6← 5, 2, 3	Ground					17 048.25	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 1, 6← 5, 2, 3	Ground					17 049.12	.05
N ¹⁴ H ₂ D	4-1773	5, 1, 5← 5, 0, 5	Ground					17 052.74	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 053.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
s-C ¹² HD ₂ C ¹² HO ¹⁶	3- 475	1, 0, 1← 0, 0, 0	Ground					17 056.65	.3
C ₆ H ₅ O ¹⁶ H	3-1051	11, 4, 7←11, 3, 8	Ground					17 056.8	
DC ¹³ :C ¹² C ¹² HO ¹⁶	4- 917	2, 1, 1← 1, 1, 0	Ground					17 068.70	.02
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 0, 3← 2, 0, 2	Ground		9/2		9/2	17 070.40	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 071.6	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		4		4	17 072.48	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		4		3	17 073.08	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		5		4	17 073.60	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 3← 4, 3, 2	Ground					17 073.67	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		3		2	17 074.14	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		1		1	17 074.48	.05
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	6, 5, 1← 6, 5, 2	Ground					17 074.52	.10
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 3← 4, 3, 2	Ground					17 074.70	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		3		3	17 075.10	.05
2d-C ₆ H ₅ C ¹² N ¹⁴	4-1294	6, 2, 4← 5, 2, 3	Ground					17 075.4	.2
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 3← 4, 3, 2	Ground					17 075.45	.05
NbO ₂ Cl ^b	4-1463	Not Reported						17 075.74	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		3		2	17 075.84	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 3← 4, 3, 2	Ground					17 075.97	.05
NbO ₂ Cl ^b	4-1463	Not Reported						17 077.00	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 077.2	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		4		4	17 078.11	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		4		3	17 078.78	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		5		4	17 079.35	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		3		2	17 079.81	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		1		1	17 080.10	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		3		3	17 080.85	.05
1C ¹³ -C ₆ H ₅ C ¹² N ¹⁴	4-1297	6, 2, 4← 5, 2, 3	Ground					17 081.3	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground		3		2	17 081.33	.05
Na ²³ Br ⁷⁹	1-	2← 1	Excited		3/2		1/2	17 082.5	.8
Na ²³ Br ⁷⁹	1-	2← 1	Excited		5/2		5/2	17 082.5	.8
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground					17 086.3	.05
F ₂ O ¹⁶ O ¹⁸	3- 12	3, 1, 2← 3, 0, 3	Ground					17 089.0	.5
2C ¹³ -C ₆ H ₅ C ¹² N ¹⁴	4-1298	6, 2, 4← 5, 2, 3	Ground					17 090.5	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	2, 1, 2← 1, 0, 1	Ground		3/2		3/2	17 090.78	.15
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 092.35	
t-HDC ¹² ₃ O ¹⁶ C ¹² ₃ HD	4- 844	2, 2, 0← 2, 1, 1	Ground					17 092.43	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground					17 092.7	
C ₆ H ₅ C ¹² N ¹⁴	4-1291	6, 2, 4← 5, 2, 3	Ground					17 095.8	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 3← 2, 1, 2	Ground		11/2		9/2	17 096.08	
N ¹⁵ H ₃	4-1772	7, 3← 7, 3	Ground					17 097.38	.06
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 103.84	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground					17 104.1	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 105.42	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 108.99	.04

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		17 110.23	
3d-C ₆ H ₅ C ¹² N ¹⁴	4-1295	6, 1, 5← 5, 1, 4	Ground					17 110.3	.2
C ¹² H ₂ Cl ³⁵ C ¹² ; C ¹² H	4- 991	3, 1, 3← 2, 1, 2	Ground					17 117.51	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	2, 1, 2← 1, 0, 1	Ground	5/2		3/2		17 117.81	.3
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	7/2 3	5/2 3			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	7/2 3	5/2 2			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	7/2 2	5/2 2			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	7/2 2	5/2 1			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	5/2 4	3/2 3			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	5/2 3	3/2 3			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	5/2 2	3/2 1			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	5/2 1	3/2 1			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	5/2 1	3/2 0			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	7/2 4	5/2 3			17 118.24	0.50
Ga ⁷¹ Cl ³⁷	1-	2← 1	Ground	7/2 5	5/2 4			17 118.24	0.50
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 125.84	
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	1, 0, 1← 0, 0, 0	Ground					17 132.35	
C ¹² H ₃ P ³¹ H ₂	3- 271	6, 2, 5← 7, 1, 7	Ground					17 142.2	.1
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	2, 1, 2← 1, 1, 1	Ground					17 148.13	
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -E	3- 198	2, 1, 2← 1, 1, 1	Ground					17 148.13	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 148.36	
D ₂ O ₂ ⁶	3- 42	Not Reported						17 152.	3.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		17 152.32	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	2, 1, 2← 1, 0, 1	Ground	5/2		3/2		17 154.98	.15
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		17 155.92	.05
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		17 161.28	.05
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		17 161.32	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		17 161.32	
(C ¹² H ₃) ₂ C ¹³ H ₃ N ¹⁴	3- 852	1, 1, 0← 0, 0, 0	Ground					17 165.0	.5
Si ²⁸ H ₃ Br ⁸¹	4- 112	2, ← 1,	Ground					17 170.45	.08
HC ¹² :C ¹² C ¹² DO ¹⁸	4- 925	2, 1, 2← 1, 1, 1	Ground					17 174.28	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	2, 1, 2← 1, 0, 1	Ground	7/2		5/2		17 175.72	.15
C ¹² H ₂ Cl ³⁷ C ¹² N ¹⁴	4- 652	3, 1, 3← 2, 1, 2	Ground					17 177.	1.
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	4, 1, 3← 4, 0, 4	Ground					17 180.01	.20
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	4, 1, 3← 4, 0, 4	Ground					17 181.68	.20
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	4, 1, 3← 4, 0, 4	Ground					17 183.30	.20
DC ¹² :C ¹² C ¹³ HO ¹⁶	4- 919	2, 0, 2← 1, 0, 1	Ground					17 189.39	.02
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 0, 3← 2, 0, 2	Ground	3/2		1/2		17 194.	2.
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	5, 4, 1← 5, 4, 2	Ground					17 199.10	.10
C ₆ H ₅ C ¹³ N ¹⁴	4-1293	6, 1, 5← 5, 1, 4	Ground					17 200.2	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 200.97	.04
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		17 212.40	.05
HDS ³²	4-1727	9, 5, 4← 9, 5, 5	Ground					17 212.61	.05
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	5, 1, 4← 5, 1, 5	Ground					17 215.30	.10
C ¹² ₄ H ₂ S ^b C ¹² ₂ H ₂ ^b	4- 854	Not Reported						17 215.5	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F _I ' F' F _I F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	5, 1, 4← 5, 1, 5	Ground		17 216.80	.10
DC ¹² :C ¹³ C ¹² HO ¹⁶	4- 918	2, 0, 2← 1, 0, 1	Ground		17 216.98	.02
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	2, 1, 2← 1, 0, 1	Ground	7/2 5/2	17 223.65	.15
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 2, 1← 2, 2, 0	Ground	7/2 5/2	17 227.84	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 2, 2← 2, 2, 1	Ground	7/2 5/2	17 227.84	.05
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground		17 228.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		17 228.32	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported			17 228.62	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported			17 229.3	.3
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	5, 1, 4← 5, 1, 5	Ground		17 229.8	
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	6, 1, 5← 6, 1, 6	Ground		17 234.91	.3
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported			17 234.91	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		17 237.77	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		17 238.04	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	5, 1, 4← 5, 1, 5	Ground		17 240.53	
C ¹² H ₃ Ge ⁷⁶ H ₃	3- 285	1, 0← 0, 0	Ground		17 242.86	.10
C ₆ ¹² H ₅ F ¹⁹	4-1281	4, 2, 3← 3, 2, 2	Ground		17 247.0	.1
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	1, 0, 1← 0, 0, 0	Ground		17 248.3	.1
3C ¹³ -C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	6, 1, 5← 5, 1, 4	Ground		17 252.9	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported			17 253.25	.1
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	4, 1, 4← 3, 0, 3	Ground		17 253.3	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	5, 4, 1← 5, 4, 2	Ground		17 254.35	.10
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground		17 255.29	
C ¹² H ₃ Ge ⁷⁴ H ₃	3- 284	1, 0← 0, 0	Ground		17 257.3	.10
O ¹⁶ F ₂ ¹⁹	4-1611	24, 2,23←23, 3,20	Ground		17 257.70	.01
O ¹⁶ F ₂ ¹⁹	4-1611	24, 2,23←23, 3,20	Ground		17 257.96	.01
O ¹⁶ F ₂ ¹⁹	4-1611	24, 2,23←23, 3,20	Ground		17 258.26	.01
C ¹² H ₃ Ge ⁷⁴ H ₃	3- 284	1, 0← 0, 0	Ground		17 258.8	.10
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	6, 1, 5← 6, 1, 6	Ground		17 263.05	.2
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported			17 263.05	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		17 263.86	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			17 265.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	4, 4, 1← 4, 2, 2	Ground		17 268.2	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	4, 4, 1← 4, 2, 2	Excited		17 278.1	.1
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	1, 0, 1← 0, 0, 0	Excited		17 281.33	.1
a-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 204	2, 0, 2← 1, 0, 1	Ground		17 281.36	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	4, 4, 1← 4, 2, 2	Excited		17 281.6	.1
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	2, 0, 2← 1, 0, 1	Ground		17 282.27	.02
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	4, 4, 1← 4, 2, 2	Excited		17 283.2	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 0, 3← 2, 0, 2	Ground	7/2 5/2	17 283.82	.05
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	10, 4, 6←10, 3, 7	Ground		17 284.4	
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	2, 0, 2← 1, 0, 1	Ground		17 285.1	.1
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	2, 0, 2← 1, 0, 1	Ground		17 285.9	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	18, 3,15←18, 3,16			17 286.	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	3, 2, 2← 2, 2, 1	Ground		17 286.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ H ₃ Br ⁷⁹	4-111	2, ← 1,	Ground					17 287.30	.08
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	7/2	3	5/2	3	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	7/2	4	5/2	3	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	7/2	5	5/2	4	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	5/2	4	3/2	3	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	7/2	2	5/2	1	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	7/2	2	5/2	2	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	7/2	3	5/2	2	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	5/2	3	3/2	3	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	5/2	1	3/2	0	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	5/2	1	3/2	1	17 289.15	0.50
Ga ⁶⁹ Cl ³⁷	1-	2← 1	Ground	5/2	2	3/2	1	17 289.15	0.50
N ¹⁴ H ₃	4-1771	7, 2← 7, 2	Ground					17 291.54	.04
C ¹² H ₃ Ge ⁷⁴ H ₃	3- 284	1, 0← 0, 0	Ground					17 299.43	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 302.03	.04
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	5, 3, 2← 5, 3, 3	Ground					17 304.89	.1
2d-C ¹² H ₅ C ¹² N ¹⁴	4-1294	6, 1, 5← 5, 1, 4	Ground					17 313.0	.2
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	4, 2, 2← 4, 2, 3	Ground					17 319.30	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					17 320.4	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						17 325.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	21, 4, 17← 20, 5, 16	Ground	39/2		37/2		17 325.0	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 326.69	
s-C ¹² H ₂ DS ³² C ¹² H ₃	3- 604	3, 1, 2← 3, 0, 3	Ground					17 327.39	.05
C ¹² H ₃ Ge ⁷³ H ₃	3- 283	1, 0← 0, 0	Ground	7/2		9/2		17 328.4	.10
C ¹² H ₃ Ge ⁷³ H ₃	3- 283	1, 0← 0, 0	Ground	11/2		9/2		17 328.4	.10
C ¹² H ₃ Ge ⁷³ H ₃	3- 283	1, 0← 0, 0	Ground	9/2		9/2		17 328.9	.10
Cl ³⁵ O ₂ ¹⁶	4-1381	21, 4, 17← 20, 5, 16	Ground	41/2		39/2		17 331.6	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						17 331.76	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 332.72	
Cl ³⁵ O ₂ ¹⁶	4-1381	21, 4, 17← 20, 5, 16	Ground	43/2		41/2		17 338.2	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 0, 3← 2, 0, 2	Ground	11/2		9/2		17 342.28	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	21, 4, 17← 20, 5, 16	Ground	45/2		43/2		17 344.7	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 345.10	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 345.70	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 346.40	
(C ¹² D ₃) ₂ C ¹² H ₃ Si ^b H	3- 879	2, 1, 1← 1, 0, 1	Ground					17 346.60	.2
DN ¹⁴ O ₃ ¹⁶	3- 32	1, 0, 1← 0, 0, 0	Ground	0		1		17 347.27	
DN ¹⁴ O ₃ ¹⁶	3- 32	1, 0, 1← 0, 0, 0	Ground	2		1		17 347.64	
DN ¹⁴ O ₃ ¹⁶	3- 32	1, 0, 1← 0, 0, 0	Ground	1		1		17 347.89	
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	4, 1, 3← 4, 0, 4	Ground					17 353.41	.20
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	4, 1, 3← 4, 0, 4	Ground					17 354.68	.20
O ¹⁶ F ₂ ¹⁹	4-1611	7, 1, 6← 6, 2, 5	Ground					17 354.71	.10
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		17 354.96	.05
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	4, 1, 3← 4, 0, 4	Ground					17 356.26	.20
DC ¹² :C ¹² C ¹² DO ¹⁶	4- 926	2, 1, 1← 1, 1, 0	Ground					17 357.40	.02

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
D ₃ ₂ C ¹² H ₃ Si ^b H	3- 879	2, 1, 1← 1, 0, 1	Ground					17 358.67	.2
I ₃ Ge ⁷² H ₃	3- 282	1, 0← 0, 0	Ground					17 358.78	.10
H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 360.58	.1
H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 361.10	.1
² HD ₂ C ¹² HO ¹⁶	3- 482	1, 0, 1← 0, 0, 0	Ground					17 363.35	.2
I ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 365.	5.
³ :C ¹² C ¹² DO ¹⁶	4- 922	2, 1, 2← 1, 1, 1	Ground					17 365.03	.02
I ₅ O ¹⁶ H	3-1051	4, 1, 4← 3, 0, 3	Ground					17 365.1	
¹⁶ F ₂ ¹⁹	4- 212	4, 3, 1← 4, 3, 2	Ground					17 366.77	.10
-C ¹² H ₅ C ¹² N ¹⁴	4-1298	6, 1, 5← 5, 1, 4	Ground					17 367.4	.1
D ₃ ₂ C ¹² H ₃ Si ^b H	3- 879	2, 1, 1← 1, 0, 1	Ground					17 374.08	.1
H ₃ ₃ N ¹⁴	3- 851	1, ← 0,	Ground					17 375.0	.3
-C ¹² H ₅ C ¹² N ¹⁴	4-1297	6, 1, 5← 5, 1, 4	Ground					17 376.0	.1
I ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	2, 1, 2← 1, 1, 1	Ground					17 378.12	
I ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	2, 1, 2← 1, 1, 1	Ground					17 378.12	
I ₃	4-1771	8, 4← 8, 4	Ground					17 378.14	.04
O ₂ ¹⁶	4-1381	14, 2,13←13, 3,10	Ground	25/2		23/2		17 379.6	
H ₃ ₃ N ¹⁴	3-851	1, ← 0,	Ground					17 380.8	.3
I ₃ C ¹² H ₅ I ¹²⁷	3- 571	3, 0, 3← 2, 0, 2	Ground	3/2		3/2		17 382.34	.05
² HD ₂ C ¹² HO ¹⁶	3- 482	1, 0, 1← 0, 0, 0	Ground					17 387.12	.3
I ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	2, 1, 2← 1, 1, 1	Ground					17 387.22	
I ₃ Si ²⁸ HF ₂ ¹⁹ .E	3- 192	2, 1, 2← 1, 1, 1	Ground					17 387.22	
H ₃ ₃ N ¹⁴	3- 851	1, ← 0,	Ground					17 387.9	.3
I ₅ C ¹² N ¹⁴	4-1291	6, 1, 5← 5, 1, 4	Ground					17 389.9	.2
D ₂ H	4-1774	6, 2, 5← 6, 1, 5	Ground					17 392.56	.05
O ₂ ¹⁶	4-1381	14, 2,13←13, 3,10	Ground	27/2		25/2		17 393.8	
H ₃ ₂ Si ²⁹ H ₂	3- 644	4, 1, 3← 4, 0, 4	Ground					17 394.96	.20
I ₅ O ¹⁶ H	3-1051	10, 4, 6←10, 3, 7	Ground					17 396.2	
H ₃ ₂ Si ²⁹ H ₂	3- 644	4, 1, 3← 4, 0, 4	Ground					17 396.51	.20
H ₃ ₂ Si ²⁹ H ₂	3- 644	4, 1, 3← 4, 0, 4	Ground					17 398.06	.20
H ₃ ₃ N ¹⁴	3- 851	1, ← 0,	Ground					17 401.	1.
¹⁶ F ₂ ¹⁹	4- 211	4, 3, 1← 4, 3, 2	Ground					17 404.77	.10
H ₃ ₃ N ¹⁴	3- 851	1, ← 0,	Ground					17 407.45	.10
I ₃ C ¹³ H:C ¹² H ₂	3- 744	1, 0, 1← 0, 0, 0	Ground					17 411.29	.03
I ₂ F ₂ ¹⁹	4- 351	34, 8,27←33, 9,24	Ground					17 411.86	.10
O ₂ ¹⁶	4-1381	14, 2,13←13, 3,10	Ground	29/2		27/2		17 413.2	
I ₂ (C ¹² N ¹⁴) ₂	4- 901	6, 0, 6← 5, 1, 5	Ground					17 414.02	
I ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	Not Reported	Ground					17 416.0	
² ClF ^b	4- 333	Not Reported						17 416.50	.1
I ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 1, 2← 1, 1, 1	Ground					17 419.8	.2
I ₅ Cl ³⁵	4-1271	6, 2, 4← 5, 2, 3	Ground					17 421.0	
I ₃ Ge ⁷⁰ H ₃	3- 281	1, 0← 0, 0	Ground					17 421.36	.10
H ₃ ₃ N ¹⁴	3- 851	1, ← 0,	Ground					17 421.41	.10
I ₅ Cl ³⁵	4-1271	6, 2, 4← 5, 2, 3	Ground					17 423.0	
³ Si ^b H ₂ D	3- 329	1, 0, 1← 0, 0, 0						17 428.89	.3

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ F ₂ ¹⁹	4- 351	34, 8,26←33, 9,25	Ground					17 429.88	.10
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 1, 2← 1, 1, 1	Ground					17 431.3	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 2, 2← 2, 2, 1	Ground	11/2		9/2		17 438.08	.05
Cl ³⁵ O ₂ ⁶	4-1381	14, 2,13←13, 3,10	Ground	31/2		29/2		17 438.7	
C ¹² H ₃ C ¹² H:C ¹² H ₂	3- 741	1, 0, 1← 0, 0, 0	Ground					17 439.49	.03
(C ¹² H ₃) ₃ N ¹⁴	3- 851	1, 0← 0, 0	Ground	1		1		17 440.33	
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	4, 1, 3← 4, 0, 4	Ground					17 441.16	.05
(C ¹² H ₃) ₃ N ¹⁴	3- 851	1, ← 0,	Ground					17 441.71	.03
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	4, 1, 3← 4, 0, 4	Ground					17 442.72	.05
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	12, 1,11←11, 2,10	Ground					17 442.95	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 2, 1← 2, 2, 0	Ground	11/2		9/2		17 443.60	.05
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	4, 1, 3← 4, 0, 4	Ground					17 444.27	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	29,21, 8←29,21, 9	Ground					17 444.90	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	29,21, 8←29,21, 9	Ground [†]					17 446.35	.1
s-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 203	2, 0, 2← 1, 0, 1	Ground					17 447.21	.2
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	5, 1, 4← 5, 1, 5	Ground					17 449.71	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 1, 2← 1, 1, 1	Excited					17 457.6	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 462.	5.
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					17 462.4	
Cl ³⁵ O ₂ ⁶	4-1381	21, 4,17←20, 5,16	Ground					17 462.6	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	3, 1, 3← 2, 1, 2	Ground					17 466.78	.2
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 1, 1← 1, 1, 0	Ground					17 468.25	.1
C ¹² D ₃ Si ²⁸ H ₂ D	3- 329	1, 0, 1← 0, 0, 0						17 472.57	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					17 475.66	.1
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	6, 4, 2← 6, 4, 3	Ground					17 476.1	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					17 476.28	.1
(C ¹² H ₃) ₃ N ¹⁴	3- 851	1, ← 0,	Excited					17 477.	1.
DC ¹² :C ¹² C ¹³ HO ¹⁶	4- 919	2, 1, 1← 1, 1, 0	Ground					17 481.12	.02
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	4, 2, 2← 4, 2, 3	Ground					17 500.91	.1
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	3, 2, 1← 3, 2, 2	Ground					17 501.02	.10
DC ¹² :C ¹³ C ¹² HO ¹⁶	4- 918	2, 1, 1← 1, 1, 0	Ground					17 502.62	.02
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					17 507.	5.
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	16, 5,11←16, 4,12	Ground	29/2		29/2		17 512.654	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	16, 5,11←16, 4,12	Ground	35/2		35/2		17 512.654	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 513.	5.
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	16, 5,11←16, 4,12	Ground	31/2		31/2		17 513.800	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	16, 5,11←16, 4,12	Ground	33/2		33/2		17 513.800	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					17 514.	
HN ¹⁴ O ₃ ¹⁶	3- 31	2, 1, 1← 2, 1, 2	Ground					17 517.51	
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	1, 0, 1← 0, 0, 0	Ground					17 522.7	.1
2,4,6d ₃ -C ₆ ¹² H ₅ F ¹⁹	4-1284	11, 3, 8←11, 3, 9	Ground					17 523.2	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	3, 2, 1← 3, 3, 3	Ground					17 525.47	.10
HC ¹² :C ¹² C ¹² HO ¹⁸	4- 915	2, 1, 2← 1, 1, 1	Ground					17 527.10	.05
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	2, 1, 1← 1, 1, 0	Ground					17 527.9	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 530.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	1, 0, 1← 0, 0, 0	Ground					17 530.5	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	3, 1, 2← 3, 0, 3	Excited					17 540.88	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						17 545.	5.
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	4, 1, 3← 4, 0, 4	Ground					17 545.41	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 1, 1← 1, 1, 0	Ground					17 548.41	.1
N ¹⁵ H ₃	4-1772	9, 6← 9, 6	Ground					17 548.42	.08
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	15, 5,10←15, 4,11	Ground	33/2		33/2		17 549.551	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	15, 5,10←15, 4,11	Ground	27/2		27/2		17 549.551	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	1, 0, 1← 0, 0, 0	Ground					17 549.69	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		17 549.70	
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	3, 1, 3← 2, 1, 2	Ground					17 550.	1.
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	16, 5,12←16, 4,13	Ground	35/2		35/2		17 551.220	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	15, 5,10←15, 4,11	Ground	29/2		29/2		17 551.220	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	15, 5,10←15, 4,11	Ground	31/2		31/2		17 551.220	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	16, 5,12←16, 4,13	Ground	29/2		29/2		17 551.220	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	16, 5,12←16, 4,13	Ground	33/2		33/2		17 552.406	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	16, 5,12←16, 4,13	Ground	31/2		31/2		17 552.406	
C ¹² H ₃ O ¹⁶ N ¹⁴ Q ₂ ¹⁶	3- 181	2, 1, 1← 1, 1, 0	Ground					17 555.17	.1
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	3, 0, 3← 2, 0, 2	Ground					17 559.47	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	2, 1, 1← 1, 1, 0	Ground					17 560.84	.1
HC ¹² :C ¹² C ¹² DO ¹⁸	4- 925	2, 0, 2← 1, 0, 1	Ground					17 561.76	.05
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	1, 0, 1← 0, 0, 0	Ground					17 564.66	
N ¹⁴ O ₂ ¹⁶ F ¹⁹	4-1581	1, 0, 1← 0, 0, 0	Ground					17 566.2	
C ¹³ H ₃ S ³² C ¹² H ₃	3- 603	3, 1, 2← 3, 0, 3	Ground					17 569.40	.05
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	2, 1, 1← 1, 1, 0	Ground					17 569.69	.02
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						17 571.94	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	15, 5,11←15, 4,12	Ground	33/2		33/2		17 572.927	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	15, 5,11←15, 4,12	Ground	27/2		27/2		17 572.927	
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	2	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	2	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	3	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	4	5/2	3	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	5	5/2	4	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	4	3/2	3	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	1	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	0	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	1	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	2	3/2	1	17 573.70	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	3	3/2	3	17 573.70	0.50
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						17 573.95	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	15, 5,11←15, 4,12	Ground	31/2		31/2		17 574.270	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	15, 5,11←15, 4,12	Ground	29/2		29/2		17 574.270	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		17 574.5	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		17 575.24	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	6, 2, 4← 6, 1, 5	Ground					17 576.96	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Cl ³⁵ O ₂ ¹⁶	4-1381	21, 4,17←20, 5,16	Ground	45/2	43/2			17 577.4	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	14, 5, 9←14, 4,10	Ground	31/2	31/2			17 578.382	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	14, 5, 9←14, 4,10	Ground	25/2	25/2			17 578.382	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	14, 5, 9←14, 4,10	Ground	27/2	27/2			17 579.894	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	14, 5, 9←14, 4,10	Ground	29/2	29/2			17 579.894	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 0, 2← 1, 0, 1	Ground	3/2	1/2			17 582.10	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	21, 4,17←20, 5,16	Ground	43/2	41/2			17 583.8	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 0, 2← 1, 0, 1	Ground	5/2	5/2			17 584.14	.07
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 585.33	.1
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	2, 0, 2← 1, 0, 1	Ground	3/2	1/2			17 587.70	
C ₆ ¹² H ₅ F ¹⁹	4-1281	4, 3, 2← 3, 3, 1	Ground					17 588.9	.1
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 0, 2← 1, 1, 1	Ground					17 589.27	.04
Cl ³⁵ O ₂ ¹⁶	4-1381	21, 4,17←20, 5,16	Ground	41/2	39/2			17 589.5	
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 0, 2← 1, 1, 1	Ground					17 589.80	.04
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	2, 0, 2← 1, 0, 1	Ground	5/2	5/2			17 589.88	
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 0, 2← 1, 1, 1	Ground					17 590.35	.04
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	14, 5,10←14, 4,11	Ground	31/2	31/2			17 592.120	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	14, 5,10←14, 4,11	Ground	25/2	25/2			17 592.120	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	14, 5,10←14, 4,11	Ground	29/2	29/2			17 593.592	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	14, 5,10←14, 4,11	Ground	27/2	27/2			17 593.592	
Cl ³⁵ O ₂ ¹⁶	4-1381	21, 4,17←20, 5,16	Ground	39/2	37/2			17 594.7	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	5, 2, 4← 6, 1, 5	Ground					17 595.24	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	13, 5, 8←13, 4, 9	Ground	23/2	23/2			17 600.829	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	13, 5, 8←13, 4, 9	Ground	29/2	29/2			17 600.829	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			17 601.44	.05
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	2, 1, 1← 2, 1, 2	Ground					17 602.40	.10
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	13, 5, 8←13, 4, 9	Ground	27/2	27/2			17 602.509	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	13, 5, 8←13, 4, 9	Ground	25/2	25/2			17 602.509	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	13, 5, 9←13, 4,10	Ground	29/2	29/2			17 608.525	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	13, 5, 9←13, 4,10	Ground	23/2	23/2			17 608.525	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	13, 5, 9←13, 4,10	Ground	25/2	25/2			17 610.259	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	13, 5, 9←13, 4,10	Ground	27/2	27/2			17 610.259	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	2, 0, 2← 1, 0, 1	Ground	1/2	1/2			17 610.80	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			17 612.98	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	2, 0, 2← 1, 0, 1	Ground	5/2	3/2			17 613.52	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ .E	3- 196	2, 0, 2← 1, 0, 1	Ground					17 614.88	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						17 615.	5.
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 0, 2← 1, 0, 1	Ground	3/2	3/2			17 615.12	.07
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 195	2, 0, 2← 1, 0, 1	Ground					17 615.39	
HN ¹⁴ O ₃ ¹⁶	3- 31	2, 1, 1← 2, 0, 2	Ground					17 616.03	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	2, 1, 1← 2, 1, 2	Ground					17 616.26	.10
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	2, 1, 1← 1, 1, 0	Ground					17 621.4	.1
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	3, 1, 2← 3, 0, 3	Ground					17 622.05	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 624.66	
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	4, 2, 2← 3, 2, 1	Ground					17 625.8	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	1, 0, 1← 0, 0, 0	Ground					17 627.05	.10
N ¹⁴ O ₂ C ¹⁶ Cl ³⁵	4-1461	Not Reported						17 627.90	
N ¹⁴ O ₂ C ¹⁶ Cl ³⁵	4-1461	2, 0, 2← 1, 0, 1	Ground		3/2		3/2	17 629.90	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	1, 0, 1← 0, 0, 0	Ground					17 633.95	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						17 637.	5.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 2, 1, 1	Ground		11/2		9/2	17 643.66	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 645.77	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	17,11, ←18,10,	Ground					17 645.83	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	17,11, ←18,10,	Ground					17 646.35	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	17,11, ←18,10,	Ground					17 646.86	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					17 647.2	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	17, 1,17←16, 2,14	Ground					17 648.07	.1
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	12, 7, 5←12, 7, 6	Ground					17 650.87	.2
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	2	3/2	1	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	0	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	1	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	3	3/2	3	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	1	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	4	3/2	3	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	5	5/2	4	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	3	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	4	5/2	3	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	2	17 650.97	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	2	17 650.97	0.50
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	17, 1,17←16, 2,14	Ground					17 652.92	.1
N ¹⁴ O ₂ C ¹⁶ Cl ³⁵	4-1461	2, 0, 2← 1, 0, 1	Ground		1/2		3/2	17 653.20	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						17 653.47	.1
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	12, 7, 5←12, 7, 6	Ground					17 655.53	.2
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	2, 1, 1← 1, 1, 0	Ground					17 659.9	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 660.45	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	7, 5, 2← 7, 4, 3	Ground		13/2		13/2	17 661.152	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	7, 5, 2← 7, 4, 3	Ground		15/2		15/2	17 662.260	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 2, 1, 1	Ground		3/2		3/2	17 662.8	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	6, 5, 1← 6, 4, 2	Ground		11/2		11/2	17 664.240	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	6, 5, 1← 6, 4, 2	Ground		13/2		13/2	17 666.026	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	5, 5, 0← 5, 4, 1	Ground		9/2		9/2	17 666.660	
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	1	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	0	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	4	5/2	3	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	2	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	3	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	2	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	1	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	7/2	5	5/2	4	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	4	3/2	3	17 666.88	0.50

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	2	3/2	1	17 666.88	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Excited	5/2	3	3/2	3	17 666.88	0.50
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	7, 6, 1← 7, 5, 2	Ground					17 668.70	.1
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁷	4-1392	5, 5, 0← 5, 4, 1	Ground		11/2		11/2	17 669.590	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					17 670.5	.1
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	1, 0, 1← 0, 0, 0	Ground					17 673.61	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 2, 1, 1	Ground		1/2		1/2	17 676.2	
C ₆ ¹² H ₅ F ¹⁹	4-1281	4, 3, 1← 3, 3, 0	Ground					17 676.6	.1
C ¹² H ₃ Si ²⁸ DF ¹⁹ -E	3- 198	2, 0, 2← 1, 0, 1	Ground					17 683.49	
C ¹² H ₃ Si ²⁸ DF ¹⁹ -A	3- 197	2, 0, 2← 1, 0, 1	Ground					17 684.10	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						17 685.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	30,15, ←29,16,	Ground					17 692.15	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	30,15, ←29,16,	Ground					17 692.55	.1
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	1, 0, 1← 0, 0, 0	Excited					17 692.59	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	30,15, ←29,16,	Ground					17 692.97	.1
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	1, 0, 1← 0, 0, 0	Excited					17 695.00	
(C ¹² H ₃) ₂ S ³⁴	3- 602	3, 1, 2← 3, 0, 3	Ground					17 697.30	.05
C ₆ ¹² H ₅ Cl ³⁵	4-1271	6, 1, 5← 5, 1, 4	Ground					17 705.8	
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	11, 4, 8←11, 4, 7	Ground					17 716.8	.2
C ¹² H ₃ Si ²⁸ HF ¹⁹ -A	3- 191	Not Reported	Ground					17 717.1	
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	6, 1, 6← 5, 2, 3	Ground					17 717.2	.1
C ¹² H ₃ Si ²⁸ HF ¹⁹ -A	3- 191	Not Reported	Ground					17 719.3	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	8, 6, 2← 8, 5, 3	Ground					17 723.34	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported						17 724.	5.
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	1, 0, 1← 0, 0, 0	Excited					17 727.13	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	8, 6, 2← 8, 5, 3	Ground					17 727.50	.1
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	4, 4, 1← 4, 2, 2	Ground					17 729.3	.2
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	2, 1, 1← 1, 1, 0	Ground					17 729.6	.1
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	11, 5, 7←11, 5, 6	Ground					17 731.0	.1
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	2, 1, 2← 1, 1, 1	Ground					17 734.50	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	8, 6, 2← 8, 5, 3	Ground					17 734.82	.1
c-HDC ¹² :C ¹² DF ¹⁹	4- 789	1, 0, 1← 0, 0, 0	Ground					17 743.8	.1
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	2	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	3	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	4	5/2	3	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	5	5/2	4	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	1	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	2	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	4	3/2	3	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	2	3/2	1	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	3	3/2	3	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	0	17 743.96	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	1	17 743.96	0.50
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 2, 4← 6, 1, 5	Ground		5		6	17 744.62	.10
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	10, 7, 3←10, 7, 4	Ground					17 745.20	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ± MHz
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 2, 4← 6, 1, 5	Ground	6		7		17 745.95	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 2, 4← 6, 1, 5	Ground	4		5		17 745.95	.10
HC ¹³ ; C ¹² C ¹² HO ¹⁶	4- 912	2, 1, 2← 1, 1, 1	Ground					17 748.96	.02
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	12, 4, 8←12, 3, 9	Ground					17 752.3	
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	7/2	2	5/2	1	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	7/2	3	5/2	3	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	7/2	2	5/2	2	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	7/2	3	5/2	2	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	5/2	1	3/2	0	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	7/2	5	5/2	4	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	5/2	1	3/2	1	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	5/2	2	3/2	1	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	5/2	3	3/2	3	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	5/2	4	3/2	3	17 759.09	0.50
Ga ⁷¹ Cl ³⁵	1-	2← 1	Ground	7/2	4	5/2	3	17 759.09	0.50
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	3, 1, 2← 3, 0, 3	Ground					17 764.15	.1
C ₆ ¹² H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	8, 2, 7← 7, 2, 6	Ground					17 765.	2.
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	4, 1, ← 3, 1,	Ground					17 765.04	.5
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					17 775.1	.5
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						17 777.2	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	6, 2, 4← 6, 1, 5	Ground					17 778.5	.2
C ^b H ₃ Cl ^b F ^b	4- 333	Not Reported						17 782.62	.1
C ^b H ₃ Cl ^b F ^b	4- 333	Not Reported						17 783.68	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	4, 1, 3← 4, 1, 4	Ground	3		3		17 784.10	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	4, 1, 3← 4, 1, 4	Ground	5		5		17 784.10	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	4, 1, 3← 4, 1, 4	Ground	4		4		17 786.54	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 797.71	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	2, 2, 1← 2, 0, 2	Ground					17 798.14	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						17 798.42	.1
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	2, 2, 1← 2, 0, 2	Ground					17 805.26	.10
Tl ²⁰⁵ I ¹²⁷	1-	11←10	Excited					17 809.2	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	3, 1, 3← 2, 1, 2	Ground					17 810.83	.2
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					17 817.1	
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	5, 1, 4← 5, 0, 5	Ground					17 823.41	.05
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	5, 1, 4← 5, 0, 5	Ground					17 824.74	.05
Tl ²⁰³ I ¹²⁷	1-	11←10	Excited					17 831.8	
HC ¹² :C ¹² C ¹² HO ¹⁸	4- 915	2, 0, 2← 1, 0, 1	Ground					17 833.28	.05
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	6, 4, 2← 6, 4, 3	Ground					17 834.1	
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	2	3/2	1	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	0	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	1	3/2	1	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	3	3/2	3	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	5/2	4	3/2	3	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	1	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	2	5/2	2	17 837.00	0.50

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	2	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	3	5/2	3	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	4	5/2	3	17 837.00	0.50
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Excited	7/2	5	5/2	4	17 837.00	0.50
HC ¹² :C ¹² C ¹³ DO ¹⁶	4- 924	2, 1, 2← 1, 1, 1	Ground					17 839.00	.02
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					17 839.1	.5
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	10, 7, 3←10, 7, 4	Ground					17 839.23	.2
HC ¹² :C ¹³ C ¹² DO ¹⁶	4- 923	2, 1, 2← 1, 1, 1	Ground					17 842.78	.02
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						17 843.8	.3
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	7, 7, 0← 7, 6, 1	Ground					17 845.0	
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	4, 1, 4← 5, 0, 5	Ground					17 845.34	.02
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 849.46	.04
Tl ²⁰³ I ¹²⁷	1-	11←10	Excited					17 852.8	
N ¹⁵ H ₃	4-1772	8, 5← 8, 5	Ground					17 855.57	.08
Na ²³ Br ⁷⁹	1-	2← 1	Excited		5/2		3/2	17 856.57	.10
Na ²³ Br ⁷⁹	1-	2← 1	Excited		7/2		5/2	17 856.57	.10
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	12, 6, 6←12, 6, 7	Ground					17 858.5	.05
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	10, 8, 2←10, 8, 3	Ground					17 863.7	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 864.	5.
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	12, 4, 8←12, 3, 9	Ground					17 864.0	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						17 865.95	
Na ²³ Br ⁸¹	1-	2← 1	Excited		7/2		5/2	17 868.49	.10
Na ²³ Br ⁸¹	1-	2← 1	Excited		5/2		3/2	17 868.49	.10
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						17 868.8	
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	2, 1, 1← 2, 0, 2	Ground					17 870.03	.05
C ¹³ H ₃ O ¹⁶ H	3- 213	31, 2, ←31, 1,	Ground					17 870.5	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 874.52	.1
(C ¹² H ₃) ₂ S ³²	3- 601	3, 1, 2← 3, 0, 3	Ground					17 874.98	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 1, 2← 3, 0, 3	Ground					17 875.28	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 1, 2← 3, 0, 3	Ground					17 875.29	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 1, 2← 3, 0, 3	Ground					17 875.58	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 1, 2← 3, 0, 3	Ground					17 875.61	.05
Tl ²⁰³ I ¹²⁷	1-	11←10	Excited					17 875.8	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 887.20	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	3, 3, 1← 3, 1, 2	Ground					17 890.51	.10
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 0, 2← 1, 0, 1	Ground					17 891.0	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						17 892.1	.3
Tl ²⁰³ I ¹²⁷	1-	11←10	Ground					17 896.0	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 0, 2← 1, 0, 1	Ground					17 896.9	.2
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	1, 0, 1← 0, 0, 0	Ground					17 899.7	.1
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	3, 1, 2← 3, 0, 3	Ground					17 903.30	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 904.86	
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	1, 0, 1← 0, 0, 0	Excited					17 905.2	.2
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	1	1/2	1	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	4	5/2	4	17 906.92	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	4	5/2	3	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	3	5/2	4	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	3	5/2	3	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	3	5/2	2	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	2	5/2	3	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	2	5/2	2	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	2	5/2	1	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	1	5/2	2	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	3	1/2	2	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	2	1/2	1	17 906.92	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	2	1/2	2	17 906.92	0.20
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	3, 3, 1← 3, 1, 2	Ground					17 908.80	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					17 911.1	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					17 913.74	.04
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	12, 8, 4←12, 8, 5	Ground					17 915.80	.2
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					17 918.9	.5
Tl ²⁰³ I ¹²⁷	1-	11←10	Excited					17 919.2	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 0, 2← 1, 0, 1	Excited					17 920.3	.2
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	4, 1, 3← 3, 1, 2	Ground					17 920.4	.1
HC ¹² :C ¹² C ¹² DO ¹⁶	4- 921	2, 1, 2← 1, 1, 1	Ground					17 928.23	.02
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	1/2	1	1/2	1	17 928.55	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	7/2	4	5/2	4	17 928.55	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	3	3/2	2	17 928.55	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	2	3/2	2	17 928.55	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	1/2	1	1/2	2	17 928.55	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	1/2	2	1/2	1	17 928.55	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	1/2	2	1/2	2	17 928.55	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	7/2	3	5/2	2	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	7/2	2	5/2	2	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	7/2	2	5/2	1	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	4	3/2	3	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	3	3/2	3	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	2	3/2	1	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	1	3/2	1	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	5/2	1	3/2	0	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	7/2	3	5/2	3	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	7/2	4	5/2	3	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	7/2	5	5/2	4	17 930.57	0.20
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	1	3/2	2	17 942.92	0.40
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	2	3/2	2	17 942.92	0.40
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	3	3/2	2	17 942.92	0.40
N ¹⁵ H ₃	4-1772	6, 2← 6, 2	Ground					17 943.45	.10
Bi ²⁰⁹ Cl ₃ ³⁵	4- 71	6, ← 5,	Ground					17 944.	1.
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	1	3/2	1	17 946.83	0.30
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	1	3/2	0	17 946.83	0.30

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	0	3/2	1	17 946.83	0.30
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	2	3/2	1	17 946.83	0.30
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	2	3/2	3	17 946.83	0.30
Ga ⁶⁹ Cl ³⁵	1-	2← 1	Ground	3/2	3	3/2	3	17 946.83	0.30
C ¹² H ₃ Si ³⁰ HF ₂ ¹⁹	3- 194	2, 0, 2← 1, 0, 1	Ground					17 949.49	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	3, 2, 1← 2, 2, 0	Ground					17 950.7	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						17 951.97	.1
C ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 1, 7← 6, 1, 6	Ground					17 952.5	.2
HC ¹² ; C ¹² C ¹² DO ¹⁸	4- 925	2, 1, 1← 1, 1, 0	Ground					17 955.10	.05
C ¹² H ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	2, 0, 2← 1, 0, 1	Ground					17 959.50	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	1, 0← 0, 0	Ground		2		3	17 959.67	.05
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	1, 0← 0, 0	Ground		4		3	17 959.91	.05
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	1, 0← 0, 0	Ground		3		3	17 960.60	.05
Tl ²⁰³ I ²⁷	1-	11←10	Ground					17 963.2	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						17 964.73	.1
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	4, 0, ← 3, 0,	Ground					17 966.75	.5
(C ¹² D ₃) ₂ C ¹² H ₃ Si ^b H	3- 879	2, 2, 0← 1, 1, 0	Ground					17 966.81	.2
Na ²³ Br ⁷⁹	1-	2← 1	Excited		7/2		5/2	17 968.42	.20
Na ²³ Br ⁷⁹	1-	2← 1	Excited		5/2		3/2	17 968.42	.20
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	7, 2, 5← 7, 1, 6	Ground					17 969.7	.2
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	4, 2, ← 3, 2,	Ground					17 970.0	.5
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	4, 3, ← 3, 3,	Ground					17 970.0	.5
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .E	3- 192	2, 0, 2← 1, 0, 1	Ground					17 970.08	
S ³⁴ O ₂ ¹⁶	4-1833	5, 2, 4← 6, 1, 5	Ground					17 970.42	.05
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	2, 0, 2← 1, 0, 1	Ground					17 970.57	
Na ²³ Br ⁸¹	1-	2← 1	Ground		3/2		3/2	17 971.0	.5
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					17 972.15	
(C ¹² D ₃) ₂ C ¹² H ₃ Si ^b H	3- 879	2, 2, 0← 1, 1, 0	Ground					17 974.66	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						17 978.22	.1
Na ²³ Br ⁸¹	1-	2← 1	Ground		5/2		3/2	17 980.48	.20
Na ²³ Br ⁸¹	1-	2← 1	Ground		7/2		5/2	17 980.48	.20
C ¹² H ₂ :C ¹² HC ¹² N ¹⁵	4-1025	2, 1, 2← 1, 1, 1	Ground					17 981.12	
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 772	4, 1, 4← 3, 1, 3	Ground					17 985.71	.2
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	2, 1, 2← 1, 1, 1	Ground					17 986.70	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					17 986.82	.1
(C ¹² D ₃) ₂ C ¹² H ₃ Si ^b H	3- 879	2, 2, 0← 1, 1, 0	Ground					17 987.14	.1
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	2, 1, 2← 1, 1, 0	Ground					17 996.71	.05
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	11, 9, 2←11, 9, 3	Ground					17 997.6	
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	2, 1, 2← 1, 1, 0	Ground					17 997.83	.05
C ¹² H ₃ Si ^b H ₂ D	3- 325	9, 1, 8← 9, 1, 9						17 998.95	.2
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	1, 0, 1← 0, 0, 0	Ground					18 001.96	.2
C ¹² H ₂ DSi ^b D ₃	3- 328	1, 0, 1← 1, 0, 0						18 002.90	.2
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	1, 0, 1← 0, 0, 0	Ground					18 005.15	.2
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	7, 5, 2← 7, 4, 3	Ground					18 005.6	
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	2, 1, 1← 2, 0, 2	Excited					18 006.54	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported		18 008.				5.	
DO ¹⁶	1-	15/2, 7←15/2, 7	Ground	13/2		13/2		18 009.60	.10
DO ¹⁶	1-	15/2, 7←15/2, 7	Ground	17/2		17/2		18 009.60	.10
DO ¹⁶	1-	15/2, 7←15/2, 7	Ground	15/2		15/2		18 009.60	.10
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	7, 1, 6← 7, 0, 7	Ground					18 011.15	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 1, 4← 5, 0, 5	Ground					18 015.71	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	4, 4, 1← 4, 2, 2	Ground					18 015.94	.10
N ¹⁴ H ₃	4-1771	7, 3← 7, 3	Ground					18 017.42	.04
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					18 023.18	.1
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	3, 1, 2← 2, 1, 1	Ground					18 023.22	
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	12, 8, 4←12, 8, 5	Ground					18 024.90	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						18 027.08	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					18 028.11	.1
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						18 030.	.5
C ¹³ H ₂ :C ¹² HC ¹² N ¹⁴	4-1022	2, 1, 2← 1, 1, 1	Ground					18 032.46	
2,4,6-d ₃ -C ₆ H ₅ F ¹⁹	4-1284	5, 1, 5← 4, 1, 4	Ground					18 038.6	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	5, 1, 4← 5, 1, 5	Ground					18 038.80	.10
C ¹² H ₃ S ³² H	3- 221	8, 2, ← 9, 1,	Ground					18 039.5	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	5, 1, 4← 5, 1, 5	Ground					18 040.50	.10
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	3, 1, 2← 3, 0, 3	Ground					18 042.39	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					18 043.35	.1
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	1, 0, 1← 0, 0, 0	Ground					18 043.35	.3
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 1, 4← 5, 0, 5	Ground					18 045.84	.1
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	2, 0, 2← 1, 0, 1	Ground					18 047.49	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	2, 1, 2← 1, 0, 1	Ground	1/2		1/2		18 048.30	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 1, 4← 5, 0, 5	Ground					18 048.95	.1
C ¹² H ₂ DSi ^b D ₃	3- 328	1, 0, 1← 1, 0, 0						18 049.08	.1
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	4, 4, 1← 4, 2, 2	Ground					18 049.35	.10
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	2, 1, 2← 1, 0, 1	Ground	5/2		5/2		18 049.90	
t-DHC ¹² :C ¹² HF ¹⁹	4- 788	1, 0, 1← 0, 0, 0	Ground					18 052.0	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	12,12, 1←12,11, 1						18 058.13	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 1, 4← 5, 0, 5	Ground					18 053.85	.1
HC ¹³ :C ¹² C ¹² HO ¹⁶	4- 912	2, 0, 2← 1, 0, 1	Ground					18 054.28	.02
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	2, 1, 2← 1, 0, 1	Ground	7/2		5/2		18 055.36	
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	6, 1, 5← 6, 0, 6	Ground					18 055.72	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	6, 4, 2← 6, 4, 3	Ground					18 061.2	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	2, 1, 2← 1, 0, 1	Ground	5/2		3/2		18 062.50	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	11, 7, 5←11, 7, 4	Ground					18 063.86	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	3, 0, 3← 2, 0, 2	Ground					18 066.55	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 068.	5.
Na ²³ Br ⁷⁹	1-	2← 1	Ground	3/2		3/2		18 070.07	.10
P ³¹ H ₂ D	4-1782	2, 1, 1← 2, 1, 2	Ground					18 070.96	.05
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	11, 7, 5←11, 7, 4	Ground					18 074.90	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	3, 3, 1← 3, 1, 2	Ground					18 075.0	.3
Na ²³ Br ⁷⁹	1-	2← 1	Ground	7/2		5/2		18 080.13	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Na ²³ Br ⁷⁹	1-	2← 1	Ground	5/2	3/2			18 080.13	.10
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					18 081.2	.5
C ¹² D ₃ Si ²⁹ H ₃	3- 324	1, ← 0,						18 081.65	.3
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 086.02	
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	1, 1, 0← 1, 0, 1	Ground					18 088.67	
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 2← 2, 2	Ground	5/2	5/2			18 094.42	.15
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 2← 2, 2	Ground	7/2	5/2			18 094.42	.15
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 1← 2, 1	Ground	7/2	7/2			18 095.24	.1
O ¹⁶ F ₂ ¹⁹	4-1611	18, 3, 16←17, 4, 13	Ground					18 095.67	.10
Na ²³ Br ⁷⁹	1-	2← 1	Ground	3/2	1/2			18 095.95	.15
Na ²³ Br ⁷⁹	1-	2← 1	Ground	5/2	5/2			18 095.95	.15
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					18 097.0	.5
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 1, 2← 1, 1, 1	Ground	2	1			18 098.69	
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 1, 2← 1, 1, 1	Ground	2	2			18 099.18	
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 1, 2← 1, 1, 1	Ground	3	2			18 099.85	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 100.	5.
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 1, 2← 1, 1, 1	Ground	1	0			18 100.97	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 102.	5.
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 0← 2, 0	Ground	5/2	3/2			18 102.76	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 0← 2, 0	Ground	3/2	1/2			18 102.76	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 1← 2, 1	Ground	5/2	3/2			18 103.84	.15
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 1← 2, 1	Ground	7/2	5/2			18 103.84	.15
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	5, 1, 4← 5, 1, 5	Ground					18 103.9	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 1, 4← 5, 0, 5	Ground					18 104.06	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 2← 2, 2	Ground	5/2	3/2			18 106.19	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 2← 2, 2	Ground	3/2	3/2			18 106.19	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, ← 2,	Ground					18 106.35	.10
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 0← 2, 0	Ground	9/2	7/2			18 107.19	.15
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 0← 2, 0	Ground	7/2	5/2			18 107.19	.15
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 1← 2, 1	Ground	3/2	1/2			18 108.06	.15
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 1← 2, 1	Ground	9/2	7/2			18 108.06	.15
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	4, 1, 4← 4, 1, 3	Ground					18 109.1	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 1← 2, 1	Ground	5/2	5/2			18 109.66	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 2← 2, 2	Ground	9/2	7/2			18 111.15	.15
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 2← 2, 2	Ground	7/2	7/2			18 111.15	.15
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 112.	5.
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 1← 2, 1	Ground	3/2	3/2			18 116.23	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 118.9	
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	3, 2← 2, 2	Ground	3/2	1/2			18 122.08	.1
N ¹⁴ H ₃	4-1771	12, 9←12, 9	Ground					18 127.32	.04
K ³⁹ I ¹²⁷	1-	5← 4	Excited					18 129.61	0.20
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 136.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	2, 1, 1← 1, 1, 0	Ground					18 140.43	.02
C ¹² H ₃ P ³¹ H ₂	3- 271	6, 2, 5← 7, 1, 7	Ground					18 141.1	.1
C ₆ H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	8, 7, 2← 7, 7, 1	Ground					18 142.	4.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₅ N ¹⁴ O ₂ ⁶	3-1041	8, 7, 3← 7, 7, 2	Ground					18 142.	4.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 142.	5.
HC ¹² :C ¹² C ¹² HO ¹⁸	4- 915	2, 1, 1← 1, 1, 0	Ground					18 142.95	.05
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	10, 8, 2←10, 8, 3	Ground					18 143.6	
3d-C ¹² H ₅ F ¹⁹	4-1282	4, 2, 2← 3, 2, 1	Ground					18 144.5	.1
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	2, 0, 2← 1, 0, 1	Ground					18 146.52	
C ¹² H ₃ Si ²⁸ HF ¹⁹ -A	3- 191	Not Reported	Ground					18 147.8	
C ¹² D ₃ Si ²⁸ H ₃	3- 323	1, ← 0,						18 150.0	.3
C ¹² H ₃ Si ²⁸ HF ¹⁹ -A	3- 191	Not Reported	Ground					18 150.2	
C ¹² H ₅ N ¹⁴ O ₂ ⁶	3-1041	8, 6, 2← 7, 6, 1	Ground					18 160.	5.
C ¹² H ₅ N ¹⁴ O ₂ ⁶	3-1041	8, 6, 3← 7, 6, 2	Ground					18 160.	5.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					18 161.4	5.
N ¹⁴ H ₃	4-1771	11, 8←11, 8	Ground					18 162.54	.04
C ¹² H ₃ N ¹⁴ O ₂ ⁶	3- 171	Not Reported	Ground					18 172.	5.
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	4, 1, ← 3, 1,	Ground					18 172.15	.5
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	5, 5, 1← 5, 3, 2	Ground					18 176.22	.10
N ¹⁴ H ₃	4-1771	13,10←13,10	Ground					18 177.99	.06
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	3, 1, 2← 3, 0, 3	Ground					18 182.24	.1
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	11, 8, 3←11, 7, 4	Ground					18 182.3	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	6, ← 5,	Ground					18 192.17	
C ¹² D ₃ Si ²⁸ H ₃	3- 323	1, ← 0,						18 192.81	.2
F ¹⁹ DC ¹² O ¹⁶	4- 272	4, 1, 3← 4, 1, 4						18 193.7	.1
HC ¹² :C ¹² C ¹² N ¹⁴	4- 881	2← 1	Ground					18 196.6	
(C ¹² H ₃) ₂ S ³²	3- 601	14, 2,13←13, 3,10	Ground					18 199.20	.05
C ¹² H ₅ N ¹⁴ O ₂ ⁶	3-1041	8, 5, 4← 7, 5, 3	Ground					18 200.	4.
(C ¹² H ₃) ₂ S ³²	3- 601	14, 2,13←13, 3,10	Ground					18 201.03	.05
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	7, 7, 1← 7, 6, 2	Ground					18 202.2	
(C ¹² H ₃) ₂ S ³²	3- 601	14, 2,13←13, 3,10	Ground					18 202.86	.05
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	10, 8, 2←10, 7, 3	Ground					18 205.2	
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	5, 5, 1← 5, 4, 2	Ground					18 208.1	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						18 208.41	.1
K ³⁹ I ¹²⁷	1-	5← 4	Ground					18 209.77	0.10
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	2, 1, 1← 1, 1, 0	Ground					18 211.08	
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	3, 1, 2← 3, 0, 3	Ground					18 212.03	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	11, 8, 3←11, 8, 4	Ground					18 213.4	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 215.	5.
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	3, 1, 2← 3, 0, 3	Ground					18 219.75	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					18 222.	
HC ¹² :C ¹² C ¹³ HO ¹⁶	4- 914	2, 1, 2← 1, 1, 1	Ground					18 226.20	.02
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					18 227.3	.5
C ^b H ₂ C ^b PF ^b	4- 333	Not Reported						18 229.29	.1
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	5, 5, 1← 5, 3, 2	Ground					18 229.66	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						18 232.98	.1
s-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 395	7, 4, 3← 7, 4, 4	Ground					18 233.5	.2
C ¹² H ₃ N ¹⁴ O ₂ ⁶	3- 171	Not Reported	Ground					18 239.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ₆ ¹² H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	8, 4, 5← 7, 4, 4	Ground					18 239.	6.
C ₆ ¹² H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	8, 3, 6← 7, 3, 5	Ground					18 239.	6.
HC ¹² :C ¹³ C ¹² HO ¹⁶	4- 913	2, 1, 2← 1, 1, 1	Ground					18 239.69	.02
C ¹² D ₃ Si ²⁸ H ₃	3- 323	1, ← 0.						18 239.95	.15
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 240.	5.
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	5, 3, 2← 5, 2, 3	Ground					18 245.0	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	7, 1, 7← 6, 1, 6	Ground					18 246.7	
N ¹⁴ H ₂ D	4-1773	8, 2, 7← 8, 1, 7	Ground					18 254.38	.05
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	9, 7, 2← 9, 7, 3	Ground					18 255.7	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 256.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 257.8	.1
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	2, 1, 1← 1, 0, 1	Ground					18 258.18	
N ¹⁵ H ₃	4-1772	7, 4← 7, 4	Ground					18 259.15	.08
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	1, 0, 1← 0, 0, 0	Ground					18 263.51	.3
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	1, 1, 0← 1, 0, 1	Ground					18 265.36	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					18 266.4	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 268.	5.
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ D:HC ¹² O ¹⁶ O ¹⁶ D	3- 664	16, , ←15,	Ground					18 270.0	
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	4, 1, 3← 3, 1, 2	Ground					18 271.6	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	6, 2, 4← 6, 1, 5	Ground					18 275.45	.2
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	6, 3, 3← 6, 2, 4	Ground					18 281.0	1.
N ¹⁴ H ₃	4-1771	10, 7←10, 7	Ground					18 285.55	.04
DC ¹² DO ¹⁶	4- 384	2, 1, 1← 2, 1, 2	Ground					18 287.90	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					18 292.3	
N ^b O ₂ Cl ^b	4-1463	Not Reported						18 300.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 301.	5.
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	7, 3, 4← 7, 3, 5	Ground					18 302.0	.05
C ¹² H ₃ Si ^b HD ₂	3- 326	9, 1, 8← 9, 1, 9						18 303.84	.1
C ¹² *HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	12,11, 2←12, 9, 3	Ground					18 305.9	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	2, 0, ← 1, 1,	Ground					18 308.64	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	11, 9, 2←11, 8, 3	Ground					18 311.2	.1
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	1, 1, 0← 1, 0, 1	Ground					18 313.54	.10
N ¹⁴ H ₃	4-1771	14,11←14,11	Ground					18 313.80	.06
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	7, 4, 3← 7, 4, 4	Ground					18 322.2	.1
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	2, 1, 2← 1, 1, 1	Ground					18 325.56	.02
HC ¹² :C ¹² C ¹² DO ¹⁶	4- 921	2, 0, 2← 1, 0, 1	Ground					18 337.94	.02
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	8, 6, 2← 8, 6, 3	Ground					18 339.0	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 340.	5.
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	2, 0, 2← 1, 0, 1	Ground					18 344.93	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	5, 5, 1← 5, 3, 2	Ground					18 346.5	.1
a-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 942	4, 2, 2← 4, 1, 3	Ground					18 347.00	.05
C ¹³ H ₃ C ¹² H ₂ F ¹⁹	3- 556	6, 3, 3← 6, 2, 6	Ground					18 348.2	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					18 348.40	
C ¹² D ₃ Si ³⁰ DF ₂ ¹⁹	3- 202	2, 1, 1← 1, 1, 0	Ground					18 349.40	.2
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	1, 0, 1← 0, 0, 0	Ground					18 350.10	.3

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	2, 0, 2← 1, 0, 1	Ground					18 350.34	.05
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ D	3- 663	16, , ←15,	Ground					18 351.7	
HN ¹⁵ O ₃ ¹⁶	3- 33	1, 0, 1← 0, 0, 0	Ground					18 357.05	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	5, 5, 1← 5, 4, 2	Ground					18 358.45	.05
HN ¹⁴ O ₃ ¹⁶	3- 31	1, 0, 1← 0, 0, 0	Ground	0			1	18 360.06	
HN ¹⁴ O ₃ ¹⁶	3- 31	1, 0, 1← 0, 0, 0	Ground	2			1	18 360.48	
HN ¹⁴ O ₃ ¹⁶	3- 31	1, 0, 1← 0, 0, 0	Ground	1			1	18 360.78	
HC ¹³ :C ¹² C ¹² HO ¹⁶	4- 912	2, 1, 1← 1, 1, 0	Ground					18 363.05	.02
C ¹² D ₃ Si ²⁹ DF ₂ ¹⁹	3- 201	2, 1, 1← 1, 1, 0	Ground					18 367.14	.2
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	9, 3, 6← 9, 2, 7	Ground					18 367.5	.5
C ¹² H ₃ C ¹² HO ¹⁸	3- 479	1, 0, 1← 0, 0, 0	Ground					18 367.75	.5
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	9, 3, 7← 8, 4, 4	Ground					18 367.8	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported						18 370.	5.
C ¹² H ₃ C ¹² HO ¹⁸	3- 479	1, 0, 1← 0, 0, 0	Ground					18 370.23	.5
(C ¹² D ₃) ₂ C ¹² H ₃ Si ^b H	3- 879	2, 2, 1← 1, 1, 1	Ground					18 372.55	.2
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	6, 6, 1← 6, 4, 2	Ground					18 373.76	.10
C ¹² H ₂ Cl ₂ ³⁵	4- 341	7, 0, 7← 6, 1, 6	Ground					18 375.	5.
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	2, ← 1,	Ground					18 377.03	.05
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 1, 1← 1, 1, 0	Ground					18 377.5	.2
t-Si ²⁸ H ₃ C ¹² H:C ¹² HD	3- 618	2, 1, 2← 1, 1, 1	Ground					18 377.57	.10
(C ¹² D ₃) ₂ C ¹² H ₃ Si ^b H	3- 879	2, 2, 1← 1, 1, 1	Ground					18 378.75	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						18 381.82	.1
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	6, 4, 2← 6, 4, 3	Ground					18 382.46	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						18 382.50	.1
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	2, 1, 1← 1, 1, 0	Ground					18 385.27	.1
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 771	4, 1, 4← 3, 1, 3	Ground					18 389.10	.2
(C ¹² D ₃) ₂ C ¹² H ₃ Si ^b H	3- 879	2, 2, 1← 1, 1, 1	Ground					18 390.30	.1
N ¹⁴ H ₃	4-1771	6, 1← 6, 1	Ground					18 391.46	.04
N ¹⁴ H ₃	4-1771	6, 1← 6, 1	Ground					18 391.65	.04
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					18 395.6	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 396.0	.1
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ D·HC ¹² O ¹⁶ O ¹⁶ H	3- 662	16, , ←15,	Ground					18 397.0	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 1, 1← 1, 1, 0	Excited					18 398.0	.2
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 772	4, 1, 3← 3, 1, 2	Ground					18 398.68	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 400.	5.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						18 401.14	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	5, 1, 4← 5, 1, 5	Ground					18 402.40	.3
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					18 403.1	
C ¹² H ₂ :C ¹³ HC ¹² N ¹⁴	4-1023	2, 1, 2← 1, 1, 1	Ground					18 405.33	
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	2, 1, 1← 2, 0, 2	Ground					18 405.56	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 0, 7← 6, 0, 6	Ground					18 410.0	.2
C ¹² H ₂ :C ¹² HC ¹² N ¹⁵	4-1025	2, 0, 2← 1, 0, 1	Ground					18 410.18	
2,4,6-d ₃ -C ₆ ¹² H ₅ F ¹⁹	4-1284	5, 0, 5← 4, 0, 4	Ground					18 413.5	.1
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	2, 1, 2← 1, 0, 1	Ground					18 414.00	.2
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	6, 4, 2← 6, 4, 3	Ground					18 414.95	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ S ³² H	3- 221	2, 1, ← 1, 0,	Ground					18 417.6	
C ¹² DHDC ¹² HDF ¹⁹	3- 561	2, 2, 0← 3, 1, 3	Ground					18 418.7	.1
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	2, 2, 0← 3, 1, 3	Ground					18 418.7	.1
C ¹² D ₃ C ¹² F ¹⁹ ₃	3- 414	2, ← 1,	Ground					18 423.6	.2
C ¹² *H ₂ S ³⁴ C ¹² *H ₂	4- 852	1, 0, 1← 0, 0, 0	Ground					18 425.8	.2
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3- 461	1, 1, 0← 0, 0, 0	Ground					18 425.9	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	7, 3, 4← 7, 2, 5	Ground	17/2		17/2		18 427.00	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	7, 3, 4← 7, 2, 5	Ground	11/2		11/2		18 427.00	
C ₆ H ₅ F ¹⁹	4-1281	4, 2, 2← 3, 2, 1	Ground					18 427.2	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	7, 3, 4← 7, 2, 5	Ground	13/2		13/2		18 429.23	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	7, 3, 4← 7, 2, 5	Ground	15/2		15/2		18 429.23	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 431.8	.1
C ¹² H ₂ :C ¹² HC ¹³ N ¹⁴	4-1024	2, 1, 2← 1, 1, 1	Ground					18 432.63	
s-Si ²⁸ HD ₂ C ¹² H:C ¹² H ₂	3- 622	2, 1, 2← 1, 1, 1	Ground					18 433.27	.10
S ³² O ¹⁶ F ¹⁹ ₂	4-1621	Not Reported						18 434.40	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	6, 4, 2← 6, 4, 3	Ground					18 434.9	
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	1, 1, 1← 0, 0, 0	Ground					18 438.12	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	1, 1, 1← 0, 0, 0	Ground					18 438.86	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	1, 1, 1← 0, 0, 0	Ground					18 439.63	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 441.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 446.3	.1
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						18 446.6	.5
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	3, 0, 3← 2, 0, 2	Ground					18 450.95	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	5, 5, 1← 5, 3, 2	Excited					18 452.1	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	2, 1, 2← 1, 1, 1	Ground					18 452.2	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	1, ← 0,	Excited					18 452.2	
C ¹³ O ¹⁶ F ¹⁹ ₃	4- 212	6, 6, 1← 6, 4, 2	Ground					18 452.36	.10
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	12,11, 2←12, 9, 3	Ground					18 454.0	
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3- 461	1, 1, 0← 0, 0, 0	Ground					18 454.7	.1
C ₆ H ₅ O ¹⁶ H	3-1051	9, 4, 5← 9, 3, 6	Ground					18 460.5	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	5, 3, 2← 5, 3, 3	Ground					18 462.7	
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	5, 1, 4← 5, 0, 5	Ground					18 462.82	.05
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	2, 1, 2← 1, 0, 1	Ground					18 463.52	.2
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	5, 1, 4← 5, 0, 5	Ground					18 464.11	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	1, 0, 1← 0, 0, 0	Ground					18 465.0	.1
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	5, 1, 4← 5, 0, 5	Ground					18 465.35	.05
C ¹³ H ₂ :C ¹² HC ¹² N ¹⁴	4-1022	2, 0, 2← 1, 0, 1	Ground					18 468.17	
C ¹² F ¹⁹ ₃ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ H	3- 661	16, , ←15, ,	Ground					18 473.0	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	11, 9, 2←11, 8, 3	Ground					18 473.09	.05
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	11, 9, 2←11, 8, 3	Ground					18 473.73	
O ¹⁶ F ¹⁹ ₂	4-1611	24, 6,19←25, 5,20	Ground					18 474.80	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 6, 1,	Ground					18 475.8	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	4, 2, 2← 4, 2, 3	Ground					18 477.6	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	6, 4, 2← 6, 3, 3	Ground					18 479.63	.1
N ¹⁴ D ₂ H	4-1774	3, 1, 3← 3, 0, 3	Ground					18 481.91	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 6, 1,	Ground					18 482.4	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	3, 1, 2← 3, 1, 3	Ground					18 484.5	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						18 486.	
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	5, 5, 1← 5, 4, 2	Ground					18 489.2	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	3, 2, 2← 3, 0, 3	Ground					18 489.3	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						18 489.7	.5
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	5, 5, 1← 5, 3, 2	Excited					18 490.0	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	4, 3, 2← 4, 1, 3	Ground					18 491.8	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 494.1	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	5, 4, 2← 5, 2, 3	Ground					18 497.3	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	1, 0, 1← 0, 0, 0	Excited					18 498.	
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	5, 1, 4← 5, 0, 5	Ground					18 498.82	
N ¹⁴ H ₃	4-1771	9, 6← 9, 6	Ground					18 499.28	.04
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 499.7	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	1, 0, 1← 0, 0, 0	Ground					18 501.87	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	1, 0, 1← 0, 0, 0	Ground					18 504.36	.1
D ₂ N ¹⁵ C ¹² HO ¹⁶	3- 161	1, 0, 1← 0, 0, 0	Ground					18 505.25	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	1, ← 0,	Excited					18 506.9	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	6, 5, 2← 6, 3, 3	Ground					18 507.2	
C ¹² HDCI ³⁵ Si ²⁸ H ₃	3- 236	5, 1, 4← 5, 0, 5	Ground					18 508.34	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 509.7	.1
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 1, 2← 1, 1, 1	Ground	2		1		18 512.14	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 1, 2← 1, 1, 1	Ground	2		2		18 512.68	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 1, 2← 1, 1, 1	Ground	3		2		18 513.31	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 1, 2← 1, 1, 1	Ground	1		0		18 514.43	
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	2, 1, 1← 1, 1, 0	Ground					18 519.8	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	2, 0, 2← 1, 0, 1	Ground					18 520.4	
N ¹⁴ S ³⁴ F ₃ ¹⁹	4-1663	2, ← 1,	Ground					18 521.34	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	7, 6, 2← 7, 4, 3	Ground					18 523.1	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 530.	5.
N ¹⁴ H ₃	4-1771	15,12←15,12	Ground					18 535.16	.08
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² F ¹⁹	3- 982	2, 1, 1← 1, 0, 1	Ground					18 536.	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	10,10, 1←10, 8, 2	Ground					18 537.8	
N ¹⁴ S ³² F ₃ ¹⁹	4-1661	2, ← 1,	Ground					18 545.10	
t-DHC ¹² :C ¹² DF ¹⁹	4- 791	1, 0, 1← 0, 0, 0	Ground					18 547.0	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	8, 7, 2← 8, 5, 3	Ground					18 548.1	
HC ¹² :C ¹² C ¹³ HO ¹⁶	4- 914	2, 0, 2← 1, 0, 1	Ground					18 556.16	.02
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 559.	5.
HC ¹² :C ¹³ C ¹² HO ¹⁶	4- 913	2, 0, 2← 1, 0, 1	Ground					18 561.73	.02
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					18 562.40	.1
a-Si ²⁸ HD ₂ C ¹² H:C ¹² H ₂	3- 623	2, 1, 2← 1, 1, 1	Ground					18 563.63	.10
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	2, 1, 1← 1, 1, 0	Ground					18 564.74	
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	1, 1, 0← 1, 0, 1	Excited					18 569.32	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						18 569.62	.1
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	9, 4, 6← 9, 4, 5	Ground					18 569.8	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₅ N ¹⁴ O ₂ ⁶	3-1041	9, 0, 9← 8, 0, 8	Ground					18 572.	2.
C ¹² H ₅ O ¹⁶ H	3-1051	9, 4, 5← 9, 3, 6	Ground					18 572.1	
C ¹² H ₃ N ¹⁴ O ₂ ⁶	3- 171	Not Reported	Ground					18 574.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	3, 1, 2← 2, 1, 1	Ground					18 576.2	
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	4, 4, 0← 4, 3, 1	Ground					18 577.5	
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	6, 2, 4← 6, 1, 5	Ground					18 577.95	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	6, 2, 4← 6, 1, 5	Ground					18 578.3	.2
S ₂ O ¹⁶	4-1821	2, 1, 2← 1, 1, 1	Ground					18 580.2	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	9, 8, 2← 9, 6, 3	Ground					18 584.2	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						18 584.59	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 586.1	.1
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					18 588.6	.5
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						18 588.99	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	5, 1, 4← 5, 1, 5	Ground					18 594.39	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	2, 1, 1← 2, 0, 2	Ground					18 595.54	
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	3, 1, 3← 3, 1, 2	Ground					18 608.04	.2
4d-C ¹² H ₅ F ¹⁹	4-1283	5, 1, 5← 4, 1, 4	Ground					18 608.4	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						18 608.96	.1
C ¹² H ₃ N ¹⁴ O ₂ ⁶	3- 171	Not Reported	Ground					18 609.	5.
C ¹² D ₃ C ¹³ O ¹⁶ F ¹⁹	3- 401	3, 1, 2← 3, 1, 3	Ground					18 609.24	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						18 609.60	.1
C ¹² DHDC ¹² HDF ¹⁹	3- 561	6, 1, 6← 5, 2, 3	Ground					18 610.4	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	7, 7, 1← 7, 5, 2	Ground					18 611.18	.10
C ¹³ H ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 893	7, ← 6,	Ground					18 617.5	.5
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	3, 3, 1← 3, 1, 2	Excited					18 621.8	.1
C ¹² H ₃ C ¹² O ¹⁶ H	3- 491	2, 2, 1← 2, 1, 2	Ground					18 625.	3.
H ₂ N ¹⁵ C ¹² DO ¹⁶	3- 157	3, 0, 3← 2, 1, 2	Ground					18 625.75	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	10, 9, 2←10, 7, 3	Ground					18 634.7	
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	3, 3, 1← 3, 1, 2	Ground					18 635.55	.1
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	10, 7, 3←10, 6, 4	Ground					18 637.0	
C ¹² H ₅ F ¹⁹	4-1281	4, 1, 3← 3, 1, 2	Ground					18 637.4	.1
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 0, 2← 1, 0, 1	Ground		2		2	18 638.14	
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 0, 2← 1, 0, 1	Ground		1		0	18 638.14	
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 0, 2← 1, 0, 1	Ground		3		2	18 639.17	
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 0, 2← 1, 0, 1	Ground		1		1	18 640.99	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	3, 0, 3← 2, 1, 2	Ground					18 644.05	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	3, 0, 3← 2, 1, 2	Ground					18 648.50	.1
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	2, 0, 2← 1, 0, 1	Ground					18 650.33	.02
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	3, 0, 3← 2, 1, 2	Ground					18 650.70	.1
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	9, 3, 6← 9, 2, 7	Ground					18 657.3	.5
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² F ¹⁹	3- 982	2, 2, 0← 1, 1, 0	Ground					18 658.	
HC ¹² :C ¹³ C ¹² DO ¹⁶	4- 923	2, 1, 1← 1, 1, 0	Ground					18 660.68	.02
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 663.70	
C ¹² H ₃ N ¹⁴ O ₂ ⁶	3- 171	Not Reported	Ground					18 665.	5.
C ¹² H ₃ Ge ^b Cl ³⁵ Cl ₂ ³⁷	3- 104	6, 2, 6← 5, 1, 4						18 665.	15.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			18 665.63	.05
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 1, 3← 2, 1, 2	Ground	3/2	1/2			18 669.75	.05
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	1, 0, 1← 0, 0, 0	Ground					18 670.03	.3
HC ¹² :C ¹² C ¹³ DO ¹⁶	4- 924	2, 1, 1← 1, 1, 0	Ground					18 670.52	.02
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	1, 0, 1← 0, 0, 0	Ground					18 672.20	.2
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	4, 4, 0← 4, 3, 1	Ground					18 674.62	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 675.6	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	1, 0, 1← 0, 0, 0	Ground					18 677.30	.2
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	1, 0, 1← 0, 0, 0	Ground					18 679.28	.2
c-HDN ¹⁵ C ¹² HO ¹⁶	3- 158	6, 1, 5← 5, 2, 4	Ground					18 679.65	
C ¹² D ₃ Si ^b HD ₂	3- 331	11, 1,10←11, 1,11						18 679.69	.3
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					18 680.50	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	19, 9, ←18,10,	Ground					18 682.74	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	19, 9, ←18,10,	Ground					18 683.46	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	19, 9, ←18,10,	Ground					18 683.77	.1
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			18 686.28	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 687.31	
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			18 690.79	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 691.44	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 2, 4← 6, 1, 5	Ground	9/2	9/2			18 695.28	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 2, 4← 6, 1, 5	Ground	15/2	15/2			18 695.28	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 2, 4← 6, 1, 5	Ground	13/2	13/2			18 695.28	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 2, 4← 6, 1, 5	Ground	11/2	11/2			18 695.28	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 2, 4← 6, 1, 5	Ground	15/2	15/2			18 697.87	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 2, 4← 6, 1, 5	Ground	11/2	11/2			18 697.87	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 2, 4← 6, 1, 5	Ground	9/2	9/2			18 697.87	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 2, 4← 6, 1, 5	Ground	13/2	13/2			18 697.87	.2
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	2, 1, 1← 1, 1, 0	Ground					18 701.20	.05
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	2, 1, 1← 1, 1, 0	Ground					18 702.11	.05
C ¹² H ₅ Cl ³⁵	4-1271	7, 0, 7← 6, 0, 6	Ground					18 702.2	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *D	4-1186	11,10, 2←11, 8, 3	Ground					18 703.1	
C ¹³ H ₃ C ¹² HO	3- 476	1, 0, 1← 0, 0, 0	Ground					18 703.69	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	5, 3, 2← 5, 2, 3	Ground					18 703.70	.05
H ₂ C ¹² :C ¹² Cl ³⁵	4- 661	3, 1, 3← 2, 0, 2	Ground					18 703.9	1.
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	9, 6, 3← 9, 6, 4	Ground					18 704.5	.1
C ¹³ H ₃ C ¹² HO	3- 476	1, 0, 1← 0, 0, 0	Ground					18 706.46	.1
s-Si ²⁸ HD ₂ C ¹² H:C ¹² H ₂	3- 622	2, 0, 2← 1, 0, 1	Ground					18 707.1	.10
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	4, 2, 2← 4, 1, 3	Ground					18 719.2	
a-C ¹² H ₂ DSi ^b HD ₂	3- 335	1, , ← 0,						18 720.19	.1
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	7, 7, 1← 7, 5, 2	Ground					18 720.94	.10
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² F ¹⁹	3- 982	2, 2, 1← 1, 1, 1	Ground					18 723.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	2, 1, 1← 1, 1, 0	Ground					18 724.23	.05
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	6, 3, 3← 6, 2, 4	Ground	15/2		15/2		18 724.40	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	6, 3, 3← 6, 2, 4	Ground	9/2		9/2		18 724.40	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	6, 3, 3← 6, 2, 4	Ground	11/2		11/2		18 725.55	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	6, 3, 3← 6, 2, 4	Ground	13/2		13/2		18 725.55	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	7, 3, 4← 7, 2, 5	Ground	17/2		17/2		18 730.03	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	7, 3, 4← 7, 2, 5	Ground	11/2		11/2		18 730.03	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	4, 4, 1← 4, 2, 2	Ground					18 730.5	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	7, 3, 4← 7, 2, 5	Ground	15/2		15/2		18 732.27	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	7, 3, 4← 7, 2, 5	Ground	13/2		13/2		18 732.27	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	22, 2,20←22, 2,21	Ground					18 737.62	
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	2, 1, 1← 2, 0, 2	Ground					18 741.20	.05
3d-C ¹² H ₃ F ¹⁹	4-1282	5, 1, 5← 4, 1, 4	Ground					18 745.2	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	9, 8, 1← 9, 7, 2	Ground					18 747.34	.05
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	9, 8, 1← 9, 7, 2	Ground					18 748.06	
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	9, 6, 3← 9, 6, 4	Ground					18 751.5	.1
HC ¹² :C ¹² C ¹² DO ¹⁶	4- 921	2, 1, 1← 1, 1, 0	Ground					18 753.58	.02
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	3, 0, 3← 2, 1, 2	Ground					18 758.5	.2
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	3, 0, 3← 2, 1, 2	Ground					18 759.0	.2
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	12, 9, 3←12, 9, 4	Ground					18 760.9	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	2, 1, 2← 1, 0, 1	Ground					18 761.11	.2
C ¹² H ₃ Si ²⁸ HF ¹⁹ .A	3- 191	Not Reported	Ground					18 761.6	
t-Si ²⁸ H ₃ C ¹² H:C ¹² HD	3- 618	2, 0, 2← 1, 0, 1	Ground					18 766.27	.10
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	4, 0, 4← 3, 1, 3	Ground					18 768.	
In ¹¹⁵ Cl ³⁷	1-	3← 2	Ground	15/2	6	13/2	5	18 768.93	0.20
In ¹¹⁵ Cl ³⁷	1-	3← 2	Ground	15/2	9	13/2	8	18 768.93	0.20
In ¹¹⁵ Cl ³⁷	1-	3← 2	Ground	15/2	8	13/2	7	18 768.93	0.20
In ¹¹⁵ Cl ³⁷	1-	3← 2	Ground	15/2	7	13/2	6	18 768.93	0.20
a-C ¹² H ₂ DSi ^b HD ₂	3- 335	1, , ← 0, ,						18 769.49	.1
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -E	3- 514	3, 1, 2← 3, 0, 3	Ground					18 770.0	.35
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 2, 8←10, 2, 9	Ground	11		11		18 770.96	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 2, 8←10, 2, 9	Ground	9		9		18 770.96	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 2, 8←10, 2, 9	Ground	10		10		18 771.93	.10
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	7, 3, 5← 8, 2, 6	Ground					18 772.5	.1
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		18 777.32	.05
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -A	3- 513	3, 1, 2← 3, 0, 3	Ground					18 777.42	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 778.6	.1
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	5, 1, 4← 5, 0, 5	Ground	7/2		7/2		18 780.34	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 781.43	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	5, 1, 4← 5, 0, 5	Ground	13/2		13/2		18 781.91	
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		18 782.26	.05
N ¹⁵ H ₃	4-1772	6, 3← 6, 3	Ground					18 788.25	.06
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	7, 5, 2← 7, 5, 3	Ground					18 790.4	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 794.95	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					18 796.2	.5
C ¹² ₃ H:C ¹² HO ¹⁶ C ¹² D:C ¹² ₃ H	4-1154	7, 5, 2← 7, 4, 3	Ground					18 798.6	
C ¹² H ₃ Br ⁸¹	4- 402	1, 0← 0, 0	Excited	1/2		3/2		18 798.72	.05
C ¹² HD ₂ C ¹² HDF ¹⁹	3- 558	1, 1, 0← 1, 0, 1	Ground					18 800.5	.1
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		18 801.98	.05
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	3, 1, 2← 2, 1, 1	Ground					18 804.10	.2
C ¹² H ₅ F ¹⁹	4-1281	57,18,39←57,18,40	Ground					18 806.	5.
H ₂ C ¹³ :C ¹² DF ¹⁹	4- 785	1, 0, 1← 0, 0, 0	Ground					18 806.0	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 806.4	.1
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		18 807.27	.05
N ¹⁴ H ₂ D	4-1773	3, 1, 3← 3, 0, 3	Ground					18 807.74	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	6, 4, 2← 6, 3, 3	Ground					18 807.79	
N ¹⁴ H ₃	4-1771	8, 5← 8, 5	Ground					18 808.56	.04
s-C ¹² H ₂ DSi ¹⁸ HD ₂	3- 334	1, , ← 0, ,						18 809.74	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 810.	5.
H ₂ C ¹² :C ¹² DF ¹⁹	4- 784	4, 1, 3← 4, 1, 4	Ground					18 810.9	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 2, 1← 2, 1, 2	Excited					18 814.	3.
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,	Excited					18 815.92	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	3, 0, 3← 2, 1, 2						18 815.98	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 2, 4← 6, 1, 5	Ground	15/2		15/2		18 816.30	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 2, 4← 6, 1, 5	Ground	9/2		9/2		18 816.30	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 2, 4← 6, 1, 5	Ground	11/2		11/2		18 816.30	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 2, 4← 6, 1, 5	Ground	13/2		13/2		18 816.30	.2
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,						18 817.5	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 817.69	
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -E	3- 516	3, 1, 2← 3, 0, 3	Ground					18 818.13	.35
C ¹² H ₃ C ¹² HDF ¹⁹	3- 552	5, 1, 4← 5, 1, 5	Ground					18 819.1	.1
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 2, 4← 6, 1, 5	Ground	13/2		13/2		18 819.38	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 2, 4← 6, 1, 5	Ground	11/2		11/2		18 819.38	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 2, 4← 6, 1, 5	Ground	15/2		15/2		18 819.38	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 2, 4← 6, 1, 5	Ground	9/2		9/2		18 819.38	.2
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 771	4, 1, 3← 3, 1, 2	Ground					18 820.72	.2
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, 1← 1, 1						18 821.63	
HDC ¹² :C ¹² O ¹⁶	4- 713	1, 0, 1← 0, 0, 0	Ground					18 821.68	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 821.93	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 824.0	
C ¹² H ₃ S ³² H	3- 221	8, 1, 7← 8, 1, 8	Ground					18 824.2	.1
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,						18 825.3	
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -A	3- 515	3, 1, 2← 3, 0, 3	Ground					18 825.46	.2
t-HDC ¹² :O ¹⁶ C ¹² :HD	4- 844	2, 1, 1← 2, 0, 2	Ground					18 829.50	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 830.96	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					18 831.1	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' _v	F'	F ₁	F		
HDC ¹² ;C ¹² O ¹⁶	4- 713	1, 0, 1← 0, 0, 0	Excited					18 832.76	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, 0← 1, 0						18 834.50	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, 1← 1, 1						18 835.3	
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	11, 8, 3←11, 8, 4	Ground					18 835.7	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,	Ground					18 836.09	.03
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,						18 836.3	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 837.	5.
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					18 842.2	
N ¹⁴ H ₃	4-1771	16,13←16,13	Ground					18 842.76	.10
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	11, 2, 9←11, 2,10	Ground					18 844.55	.2
C ¹² H ₂ :C ¹² HC ¹² N ¹⁵	4-1025	2, 1, 1← 1, 1, 0	Ground					18 846.25	
HDC ¹² ;C ¹² O ¹⁶	4- 713	1, 0, 1← 0, 0, 0	Excited					18 846.86	
C ¹² H ₃ Br ⁷⁹	4- 401	1, 0← 0, 0	Excited	1/2			3/2	18 846.88	.05
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,	Ground					18 848.53	.03
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	11, 2, 9←11, 2,10	Ground					18 849.74	.3
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,						18 849.8	
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	1, 0, 1← 0, 0, 0	Ground					18 851.4	
s-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 943	3, 1, 2← 3, 0, 3	Ground					18 852.70	.05
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,	Excited					18 854.9	
4d-C ¹² H ₅ F ¹⁹	4-1283	7, 1, 6← 7, 1, 7	Ground					18 858.0	.1
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	2, 1← 1, 1	Ground	5/2			3/2	18 861.48	.05
HDN ¹⁴ C ¹² N ¹⁴	4- 362	1, 0, 1← 0, 0, 0	Ground					18 861.7	.1
HDN ¹⁴ C ¹² N ¹⁴	4- 362	1, 0, 1← 0, 0, 0	Excited					18 861.7	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	2, 0, 2← 1, 1, 1	Ground					18 864.4	
C ¹² H ₂ :C ¹³ HC ¹² N ¹⁴	4-1023	2, 0, 2← 1, 0, 1	Ground					18 864.60	
C ¹³ H ₃ C ¹² H ₂ F ¹⁹	3- 556	7, 1, 7← 6, 2, 4	Ground					18 865.6	.5
C ¹² H ₂ DC ¹² HDF ¹⁹	3- 557	4, 3, 1← 5, 2, 4	Ground					18 868.2	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						18 869.	5.
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	2, 2, 1← 3, 1, 2	Ground					18 871.6	.1
HDC ¹² ;C ¹² O ¹⁶	4- 713	1, 0, 1← 0, 0, 0	Excited					18 877.65	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .E	3- 702	2, 1, 2← 1, 1, 1						18 877.90	.2
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .A	3- 701	2, 1, 2← 1, 1, 1						18 877.93	.2
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	2, ← 1,	Excited					18 882.01	
C ¹² H ₂ :C ¹² HC ¹³ N ¹⁴	4-1024	2, 0, 2← 1, 0, 1	Ground					18 882.63	
(C ¹² H ₃) ₃ N ¹⁴ .B ¹¹ (C ¹² H ₃) ₃	3-1081	6, ← 5,						18 884.	10.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					18 884.52	.1
N ¹⁴ H ₃	4-1771	6, 2← 6, 2	Ground					18 884.76	.04
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	2, 1← 1, 1	Ground	5/2			5/2	18 886.8	
HC ¹² :C ¹³ C ¹² HO ¹⁶	4- 913	2, 1, 1← 1, 1, 0	Ground					18 887.44	.02
c-HDC ¹² :C ¹² HF ¹⁹	4- 787	1, 0, 1← 0, 0, 0	Ground					18 888.8	.1
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	3, 1, 2← 3, 0, 3	Ground					18 889.37	
HC ¹² :C ¹² C ¹³ HO ¹⁶	4- 914	2, 1, 1← 1, 1, 0	Ground					18 889.96	.02
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	8, 8, 1← 8, 6, 2	Ground					18 891.66	.10
C ¹² H ₃ Br ⁸¹	4- 402	1, 0← 0, 0	Excited	5/2			3/2	18 895.04	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 895.7	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F' ₁	F'	F ₁	F		
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	3, 1, 2← 3, 0, 3	Ground					18 896.82	.2
(C ¹² D ₃) ₂ O ¹⁶	3- 592	1, 1, 0← 1, 0, 1	Ground					18 898.3	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	10, 7, 3←10, 7, 4	Ground					18 900.32	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	10, 7, 3←10, 7, 4	Ground					18 900.98	.1
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	1, 0, 1← 0, 0, 0	Ground					18 904.01	.1
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	2, 0← 1, 0	Ground		5/2		3/2	18 904.22	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	2, 0← 1, 0	Ground		7/2		5/2	18 904.22	.05
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	4, 2, 2← 4, 1, 3	Ground					18 905.09	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						18 907.5	.3
C ¹² H ₃ Ge ^b C ¹³ ₂ ³⁵ Cl ³⁷	3- 105	6, 2, 6← 5, 1, 4						18 910.	15.
C ¹³ H ₂ :C ¹² HC ¹² N ¹⁴	4-1022	2, 1, 1← 1, 1, 0	Ground					18 911.15	
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	2, 1← 1, 1	Ground		7/2		5/2	18 912.15	.05
(C ¹² D ₃) ₂ O ¹⁶	3- 592	1, 1, 0← 1, 0, 1	Ground					18 912.8	.2
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	25, 3,23←24, 4,20	Ground					18 916.	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	17, 2,15←16, 3,14	Ground					18 916.70	.1
C ₆ H ₅ O ¹⁶ H	3-1051	5, 0, 5← 4, 1, 4	Ground					18 919.46	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					18 923.7	.5
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	2, 1← 1, 1	Ground		3/2		1/2	18 925.3	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					18 928.16	
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	1, 0, 1← 0, 0, 0	Excited					18 929.5	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					18 938.	5.
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						18 940.14	
C ¹² H ₃ Br ⁸¹	4- 402	1, 0← 0, 0	Ground		1/2		3/2	18 943.38	.05
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	1, 1, 1← 2, 0, 2	Ground		1		2	18 956.28	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	1, 1, 1← 2, 0, 2	Ground		2		3	18 956.28	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	1, 1, 1← 2, 0, 2	Ground		0		1	18 956.28	.1
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	18 959.00	.07
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	17, 1,17←16, 2,14	Ground					18 961.29	.1
C ¹² H ₃ Br ⁷⁹	4- 401	1, 0← 0, 0	Excited		5/2		3/2	18 962.19	.05
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						18 963.78	
t-HDN ¹⁵ C ¹² HO ¹⁶	3- 159	4, 0, 4← 3, 1, 3	Ground					18 964.62	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 0, 2← 1, 0, 1	Ground		2		2	18 965.48	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 0, 2← 1, 0, 1	Ground		1		0	18 965.48	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 0, 2← 1, 0, 1	Ground		3		2	18 966.61	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	17, 1,17←16, 2,14	Ground					18 967.52	.1
C ¹² ₂ DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	9, 6, 4← 9, 5, 4	Ground					18 968.0	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 0, 2← 1, 0, 1	Ground		1		1	18 968.41	
HN ¹⁴ O ₃ ¹⁶	3- 31	9, 7, 2← 9, 7, 3	Ground					18 969.56	
C ¹² H ₂ F ₃ ¹⁹	4- 351	43,12,31←44,11,34	Ground					18 972.43	.10
C ¹² H ₂ F ₂ ¹⁹	4- 351	43,12,32←44,11,33	Ground					18 972.43	.10
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² ₂ H ₂	3- 761	4, 1, 3← 3, 2, 2	Ground					18 972.75	.1
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² ₂ H ₂	3- 761	4, 1, 3← 3, 2, 2	Ground					18 973.03	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	2, 1, 2← 1, 0, 1	Ground					18 973.87	.03
C ¹² ₂ D:C ¹² DC ¹² D:C ¹² DN ¹⁴ ₂ H	4-1185	9, 9, 0← 9, 8, 1	Ground					18 975.3	
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	2, 1, 1← 1, 1, 0	Ground					18 978.78	.02

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
s-Si ²⁸ HD ₂ C ¹² H:C ¹² H ₂	3- 622	2, 1, 1← 1, 1, 0	Ground					18 986.14	.10
C ¹² ₃ D:C ¹² DC ¹² D:C ¹² DN ¹⁴ ₃ H	4-1185	3, 1, 2← 3, 0, 3	Ground					18 989.6	
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						18 991.57	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					18 991.8	.1
C ¹² H ₃ Br ⁷⁹	4- 401	1, 0← 0, 0	Ground	1/2		3/2		18 992.47	.05
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		18 993.67	.05
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 2, 6← 9, 1, 9	Ground	7		8		18 993.86	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 2, 6← 9, 1, 9	Ground	9		10		18 993.86	.10
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		18 994.08	.05
C ¹² H ₃ C ¹³ :C ¹² C ¹² F ₃ ¹⁹	3- 894	7, ← 6,	Ground					18 995.0	.5
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 2, 6← 9, 1, 9	Ground	8		9		18 995.60	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 001.	5.
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		19 002.3	.05
a-C ¹² D ₂ H(C ¹² H ₃) ₂ Si ^b D	3- 884	2, 1, 1← 1, 0, 1	Ground					19 002.95	.10
S ³⁴ ₃ HC ¹² :C ¹² HC ¹² H:C ¹² ₃ H	4-1166	2, 1, 1← 1, 1, 0	Ground					19 003.9	3.
DN ¹⁴ O ₃ ⁶	3- 32	1, 1, 1← 0, 0, 0	Ground	1		1		19 005.40	
DN ¹⁴ O ₃ ⁶	3- 32	1, 1, 1← 0, 0, 0	Ground	2		1		19 005.61	
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		19 005.8	.05
DN ¹⁴ O ₃ ⁶	3- 32	1, 1, 1← 0, 0, 0	Ground	0		1		19 005.89	
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	6, 2, 4← 5, 3, 3	Ground					19 006.19	.01
S ³⁴ ₃ HC ¹² :C ¹² HC ¹² H:C ¹² ₃ H	4-1166	2, 1, 1← 1, 1, 0	Ground					19 006.4	.05
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		19 008.6	.05
O ¹⁶ F ₂ ¹⁹	4-1611	15, 4, 11← 16, 3, 14	Ground					19 009.18	.10
C ¹² ₃ H:C ¹² HO ¹⁶ C ¹² H:C ¹² ₃ H	4-1151	8, 8, 1← 8, 6, 2	Ground					19 011.46	
S ³² ₃ HC ¹² :C ¹² DC ¹² H:C ¹² ₃ H	4-1163	4, 1, 4← 4, 1, 3	Ground					19 012.5	.1
c-Si ²⁸ H ₃ C ¹² H:C ¹² HD	3- 617	2, 1, 2← 1, 1, 1	Ground					19 013.32	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					19 013.55	.04
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 0, 3← 2, 0, 2	Ground	3/2		1/2		19 013.66	.05
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		19 014.6	.05
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		19 014.75	.05
a-Si ²⁸ HD ₂ C ¹² H:C ¹² H ₂	3- 623	2, 0, 2← 1, 0, 1	Ground					19 015.05	.10
C ¹² H ₃ Br ⁸¹	4- 402	1, 0← 0, 0	Excited	3/2		3/2		19 015.66	.05
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		19 023.9	.05
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -E	3- 512	3, 1, 2← 3, 0, 3	Ground					19 024.13	.2
C ¹² H ₃ N ¹⁴ O ₂ ⁶	3- 171	Not Reported	Ground					19 025.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 027.1	.1
H ₂ N ¹⁵ C ¹² DO ¹⁶	3- 157	4, 2, 3← 5, 1, 4	Ground					19 029.94	
C ₆ H ₅ O ¹⁶ H	3-1051	5, 0, 5← 4, 1, 4	Ground					19 031.50	
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -A	3- 511	3, 1, 2← 3, 0, 3	Ground					19 032.18	.2
C ¹² ₃ DHC ¹² H:C ¹² ₃ H	4-1034	2, 1, 1← 2, 1, 2	Ground					19 034.3	
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	8, 1, 7← 8, 0, 8	Ground					19 034.52	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	2, 1, 2← 1, 1, 1	Ground					19 034.7	.2
C ¹² H ₂ F ₂ ¹⁹	4- 351	38, 9,30←37,10,27	Ground					19 034.89	.10
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	8, 8, 1← 8, 6, 2	Ground					19 039.51	.10
C ¹² H ₃ Br ⁸¹	4- 402	1, 0← 0, 0	Ground	5/2		3/2		19 039.69	.05
C ¹² H ₂ F ₂ ¹⁹	4- 351	38, 9,29←37,10,28	Ground					19 039.76	.10
c-C ¹² HF ¹⁹ ;C ¹² HCl ³⁵	4- 641	5, 1, 4← 5, 0, 5	Ground	7/2		7/2		19 043.40	
a-Si ²⁸ H ₂ DC ¹² H:C ¹² H ₂	3- 621	2, 1, 2← 1, 1, 1	Ground					19 044.95	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 045.7	.1
c-C ¹² HF ¹⁹ ;C ¹² HCl ³⁵	4- 641	5, 1, 4← 5, 0, 5	Ground	13/2		13/2		19 045.89	
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	8, 4, 4← 8, 4, 5	Ground					19 047.52	.2
C ¹² DH ₂ C ¹² HDF ¹⁹	3- 562	5, 1, 4← 4, 2, 3	Ground					19 048.2	.1
c-C ¹² HF ¹⁹ ;C ¹² HCl ³⁵	4- 641	5, 1, 4← 5, 0, 5	Ground	9/2		9/2		19 051.40	
c-C ¹² HF ¹⁹ ;C ¹² HCl ³⁵	4- 641	5, 1, 4← 5, 0, 5	Ground	11/2		11/2		19 053.22	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 055.	5.
HC ¹² N ¹⁵	4- 295	9← 9	Excited					19 055.4	.3
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	5, 3, 2← 5, 3, 3	Ground					19 055.8	.1
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	7, 1, 6← 7, 0, 7	Ground					19 057.54	.2
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	10, 8, 2←10, 7, 3	Ground					19 063.6	.1
HC ¹² ;C ¹² C ¹² DO ¹⁶	4- 921	2, 1, 2← 3, 0, 3	Ground					19 063.79	.02
s-C ¹² D ₂ H(C ¹² H ₃) ₂ Si ^b D	3- 883	2, 1, 1← 1, 0, 1	Ground					19 063.92	.10
C ¹² H ₃ Br ⁸¹	4- 402	1, ← 0,	Ground					19 064.40	.1
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	12, 9, 3←12, 9, 4	Ground					19 068.4	
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	25, 3,23←24, 4,20	Ground					19 076.	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						19 076.34	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		19 080.7	
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	1, 1, 1← 0, 0, 0	Ground					19 082.67	.05
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	1, 1, 1← 0, 0, 0	Ground					19 083.52	.05
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	4, 1, 3← 4, 0, 4	Ground					19 084.40	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					19 086.1	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 088.39	
S ³² *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1161	7, 3, 5← 7, 3, 4	Ground					19 089.0	.1
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	2, 0, 2← 1, 0, 1	Ground					19 090.0	.2
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	5, 3, 2← 5, 2, 3	Ground					19 095.2	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		19 095.8	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	3, 1, 2← 3, 0, 3	Ground					19 098.79	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						19 098.9	.3
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² Cl ³⁷	3-1062	11, ←10,	Ground					19 101.2	.5
4d-C ¹² H ₃ F ¹⁹	4-1283	5, 0, 5← 4, 0, 4	Ground					19 103.1	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 2, 4← 5, 3, 3	Ground					19 105.40	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 2, 4← 5, 3, 3	Ground					19 106.02	.1
C ¹² H ₃ Br ⁷⁹	4- 401	1, 0← 0, 0	Excited	3/2		3/2		19 106.60	.10
C ¹² H ₃ Br ⁷⁹	4- 401	1, 0← 0, 0	Ground	5/2		3/2		19 107.72	.05
D ₂ C ¹² :C ¹² DCl ³⁷	4- 765	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		19 109.40	.2
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		19 109.86	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² _* HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ _*	4-1206	12, 9, 3←12, 9, 4	Ground					19 110.5	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					19 110.66	.04
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		19 110.67	.05
C ¹² _* HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ _*	4-1204	2, 1, 1← 1, 1, 0	Ground					19 116.5	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 118.8	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 2, 4← 6, 1, 5	Ground	9/2		9/2		19 125.31	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 2, 4← 6, 1, 5	Ground	11/2		11/2		19 125.31	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 2, 4← 6, 1, 5	Ground	13/2		13/2		19 125.31	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 2, 4← 6, 1, 5	Ground	15/2		15/2		19 125.31	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 125.6	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 126.2	
S ₂ O ¹⁶	4-1821	2, 0, 2← 1, 0, 1	Ground					19 126.4	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 126.93	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 127.65	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 2, 4← 6, 1, 5	Ground	13/2		13/2		19 128.55	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 2, 4← 6, 1, 5	Ground	9/2		9/2		19 128.55	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 2, 4← 6, 1, 5	Ground	15/2		15/2		19 128.55	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 2, 4← 6, 1, 5	Ground	11/2		11/2		19 128.55	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 128.86	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 129.54	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 129.88	
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 0, 3← 2, 0, 2	Ground	3/2		1/2		19 133.69	.05
C ¹³ _* H:C ¹² HO ¹⁶ C ¹² H:C ¹² _* H	4-1157	6, 6, 1← 6, 4, 2	Ground					19 133.7	.1
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		19 135.33	.05
C ¹² H ₃ Br ⁷⁹	4- 401	1, ← 0,	Ground					19 136.73	.1
C ₆ H ₅ F ¹⁹	4-1281	9, 2, 7← 9, 2, 8	Ground					19 137.0	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					19 139.	5.
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 509	3, 1, 2← 3, 0, 3	Ground					19 139.68	.2
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					19 140.	20.
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	2, 1, 2← 1, 0, 1	Ground					19 143.21	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 145.2	.1
C ¹² _* D:C ¹² HC ¹² H:C ¹² HN ¹⁴ _* H	4-1183	6, 4, 2← 6, 3, 3	Ground					19 146.1	
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 508	3, 1, 2← 3, 0, 3	Ground					19 147.85	.2
S ³² _* C ¹² H:C ¹³ HC ¹² H:C ¹² _* H	4-1168	2, 1, 1← 1, 1, 0	Ground					19 148.3	.05
C ¹² _* H:C ¹² HO ¹⁶ C ¹² D:C ¹² _* H	4-1154	12,10, 2←12, 9, 3	Ground					19 150.6	
3d-C ₆ H ₅ F ¹⁹	4-1282	5, 0, 5← 4, 0, 4	Ground					19 153.2	.1
H ₂ C ¹³ :C ¹² HF ¹⁹	4- 782	1, 0, 1← 0, 0, 0	Ground					19 154.31	.05
C ¹² D ₂ HC ¹² F ¹⁹	3- 413	2, 1, 1← 1, 1, 0	Ground					19 157.8	.2
t-HDN ¹⁵ C ¹² HO ¹⁶	3- 159	1, 0, 1← 0, 0, 0	Ground					19 159.33	
C ¹² H ₃ Br ⁸¹	4- 402	1, 0← 0, 0	Ground	3/2		3/2		19 160.30	.05
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					19 162.	
t-Si ²⁸ H ₃ C ¹² H:C ¹² HD	3- 618	2, 1, 1← 1, 1, 0	Ground					19 162.76	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Si ²⁸ H ₃ C ¹² H:C ¹³ H ₂	3- 624	2, 1, 2← 1, 1, 1	Ground					19 162.94	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 164.	5.
HC ¹² :C ¹² HO ¹⁶ C ¹² O ¹⁶ O ¹⁶ *	4- 931	3, 1, 3← 2, 1, 2	Ground					19 169.62	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 173.0	.1
C ¹² H ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 891	7, ← 6,	Ground					19 176.2	.1
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 2, 6← 6, 2, 5	Ground					19 179.5	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		19 182.0	
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	6, 3, 3← 6, 3, 4	Ground					19 186.0	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	3, 2, 2← 3, 1, 3	Ground					19 189.4	
C ¹² H ₃ Ge ^b C ₃ ³⁵	3- 107	6, ← 5,						19 190.	15.
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					19 190.48	
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	4, 1, 3← 4, 0, 4	Ground					19 190.49	.05
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 1, 1← 1, 1, 0	Ground	2		1		19 190.57	
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	1, 1, 1← 0, 0, 0	Ground					19 191.00	
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 1, 1← 1, 1, 0	Ground	3		2		19 191.72	
C ¹² H ₂ :C ¹² DC ¹² N ¹⁴	4-1026	2, 1, 1← 1, 1, 0	Ground	1		0		19 192.98	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	8, 5, 3← 8, 4, 4	Ground					19 193.3	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	2, 1, 2← 1, 0, 1	Ground					19 193.60	.2
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		19 200.6	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 202.	5.
N ^b O ₂ ^b Cl ^b	4-1463	Not Reported						19 202.52	
N ^b O ₂ ^b Cl ^b	4-1463	Not Reported						19 203.68	
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	4, 1, 3← 4, 0, 4	Ground					19 204.21	.05
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	4, 1, 3← 4, 0, 4	Ground					19 206.75	.05
s-Si ²⁸ H ₂ DC ¹² H:C ¹² H ₂	3- 619	2, 1, 2← 1, 1, 1	Ground					19 213.72	.10
C ¹² H ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 891	7, ← 6,	Excited					19 214.8	.1
N ¹⁴ H ₃	4-1771	7, 4← 7, 4	Ground					19 218.36	.04
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	9, 9, 1← 9, 7, 2	Ground					19 218.49	.10
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	3, 1, 2← 2, 1, 1	Ground					19 218.84	.2
C ₆ ¹² H ₅ F ¹⁹	4-1281	5, 1, 5← 4, 1, 4	Ground					19 219.8	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	1, 0, 1← 0, 0, 0	Ground					19 225.7	.2
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 2, 8←10, 2, 9	Ground	9		9		19 226.21	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 2, 8←10, 2, 9	Ground	11		11		19 226.21	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 2, 8←10, 2, 9	Ground	10		10		19 227.17	.10
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	1, 0, 1← 0, 0, 0	Ground					19 229.94	.2
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						19 230.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 230.	5.
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	5, 0, 5← 4, 1, 4	Ground					19 232.16	.1
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	1, 0, 1← 0, 0, 0	Ground					19 232.43	.3
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 233.	5.
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported						19 238.	5.
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	12,10, 2←12, 9, 3	Ground					19 245.1	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	9, 7, 2← 9, 7, 3	Ground					19 248.2	.1
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	13,12, 1←13,12, 2	Ground					19 250.	10.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					19 252.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ Br ⁷⁹	4- 401	1, 0← 0, 0	Ground		3/2		3/2	19 252.11	.05
Si ²⁸ H ₃ C ¹² D:C ¹² H ₂	3- 616	2, 1, 2← 1, 1, 1	Ground					19 252.34	.10
C ¹² H ₃ C ¹² :C ¹² C ¹² F ¹⁹ ₃	3- 891	7, ← 6,	Excited					19 252.4	.1
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	3, 2, 1← 3, 1, 2	Ground					19 253.07	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	14,10, 4←14,10, 5	Ground					19 253.42	.1
F ¹⁹ O ¹⁶ ₂	3- 11	4, 1, 3← 4, 0, 4	Ground					19 253.5	.5
t-DHC ¹² :C ¹² HF ¹⁹	4- 788	5, 1, 4← 5, 1, 5	Ground					19 253.7	.1
H ₂ C ¹² :C ¹² F ¹⁹ ₂	4- 681	Not Reported						19 254.	1.
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	14,10, 4←14,10, 5	Ground					19 254.38	.1
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	5, 3, 2← 5, 3, 3	Ground					19 256.	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	1, 0, 1← 0, 0, 0	Ground					19 262.3	.3
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	2, 1, 2← 3, 0, 3	Ground					19 263.1	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	1, 0, 1← 0, 0, 0	Ground					19 265.3	.2
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	1, 0, 1← 0, 0, 0	Ground					19 268.27	.2
O ¹⁸ O ¹⁶ O ¹⁸	4-1846	20, 3,17←21, 2,20	Ground					19 270.1	
HN ¹⁴ O ¹⁶ ₃	3- 31	1, 1, 1← 0, 0, 0	Ground	1			1	19 271.45	
HN ¹⁴ O ¹⁶ ₃	3- 31	1, 1, 1← 0, 0, 0	Ground	2			1	19 271.69	
HN ¹⁴ O ¹⁶ ₃	3- 31	1, 1, 1← 0, 0, 0	Ground	0			1	19 272.06	
HN ¹⁵ O ¹⁶ ₃	3- 33	1, 1, 1← 0, 0, 0	Ground					19 272.44	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 273.6	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						19 273.78	.1
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁸¹	4- 46	3, 1, 3← 2, 1, 2	Ground		9/2		7/2	19 281.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 282.	5.
4d-C ¹² H ₅ F ¹⁹	4-1283	12, 3, 9←12, 3,10	Ground					19 285.1	.1
C ¹² H ₃ C ¹² :C ¹² C ¹² F ¹⁹ ₃	3- 891	7, ← 6,	Excited					19 291.0	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	4, 3, 2← 4, 2, 3	Ground					19 294.1	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					19 294.5	.5
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 3← 4, 3	Ground					19 296.08	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 2← 4, 2	Ground					19 296.98	.1
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁸¹	4- 46	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	19 297.	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 1← 4, 1	Ground					19 297.52	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 0← 4, 0	Ground					19 297.70	.1
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	3, 0, 3← 2, 0, 2	Ground					19 297.8	.2
C ¹² HCl ³⁵ Cl ³⁷	4- 262	3, 2, 1← 2, 1, 1	Ground					19 298.31	.21
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	3, 1, 2← 3, 0, 3	Ground					19 298.88	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	3, 1, 2← 3, 0, 3	Ground					19 307.57	.2
HC ¹³ N ¹⁴	4- 293	9← 9	Excited					19 315.70	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						19 316.96	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 318.3	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	9, 7, 2← 9, 6, 3	Ground					19 318.79	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H	3- 721	9, 7, 2← 9, 6, 3	Ground					19 319.22	.1
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 1, 2← 2, 1, 1	Ground		3/2		1/2	19 320.66	.05
Si ³⁰ H ₃ C ¹² H:C ¹² H ₂	3- 614	2, 1, 2← 1, 1, 1	Ground					19 320.91	.10
D ₂ O ¹⁶	3- 42	Not Reported						19 322.	3.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 1, 2← 2, 1, 1	Ground		9/2		7/2	19 322.63	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 324.2	.1
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	4, 1, 3← 4, 0, 4	Ground					19 327.03	.05
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	4, 1, 3← 4, 0, 4	Ground					19 327.31	.05
C ¹² H ₃ C ¹² :C ¹² C ¹² F ¹⁹	3- 891	7, ← 6,	Excited					19 328.	2.
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 1← 4, 1	Excited					19 328.94	.1
C ¹² H ₂ :C ¹³ HC ¹² N ¹⁴	4-1023	2, 1, 1← 1, 1, 0	Ground					19 331.98	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	1, 1, 1← 0, 0, 0	Ground		3/2		3/2	19 333.62	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 334.0	.1
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	1, 1, 1← 0, 0, 0	Ground		5/2		3/2	19 335.66	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 3← 4, 3	Excited					19 335.80	.1
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	7, 4, 3← 7, 3, 4	Ground					19 336.6	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 4← 4, 4	Excited					19 337.14	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 2← 4, 2	Excited					19 337.14	.1
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁷	4- 642	1, 1, 1← 0, 0, 0	Ground		1/2		3/2	19 337.18	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 3← 4, 3	Excited					19 338.02	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 1← 4, 1	Excited					19 338.02	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 2← 4, 2	Excited					19 338.58	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 0← 4, 0	Excited					19 338.58	.1
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 1, 2← 2, 1, 1	Ground		5/2		3/2	19 338.73	.05
C ¹² H ₂ :C ¹² HC ¹³ N ¹⁴	4-1024	2, 1, 1← 1, 1, 0	Ground					19 340.26	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					19 341.1	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 342.	5.
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	4, 2, 3← 5, 1, 4	Ground					19 343.9	.1
DC ¹² N ¹⁵	4- 296	10←10	Excited					19 344.30	.1
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	19 344.35	.05
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	5, 1← 4, 1	Excited					19 348.50	.1
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	2, 1, 2← 1, 0, 1	Ground					19 352.5	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					19 352.5	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 352.65	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	8, 1, 7← 8, 0, 8	Ground					19 352.82	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 353.0	
H ₂ C ¹² :C ¹³ DF ¹⁹	4- 786	1, 0, 1← 0, 0, 0	Ground					19 358.0	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	2, 1, 2← 1, 0, 1	Ground					19 361.5	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 3, 2← 5, 3, 3	Ground					19 369.15	.1
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					19 370.	5.
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	2, 1, 1← 1, 1, 0	Ground					19 372.4	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 380.	5.
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	3, 1, 3← 2, 1, 2	Ground		9/2		7/2	19 380.6	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 6, 2← 6, 6, 1	Ground					19 383.5	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 6, 1← 6, 6, 0	Ground					19 383.5	
N ¹⁵ H ₃	4-1772	5, 2← 5, 2	Ground					19 387.53	.06

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₇	F ₁	F		
H ₂ C ¹² :C ¹² DF ¹⁹	4- 784	1, 0, 1← 0, 0, 0	Ground					19 388.1	.1
C ¹² H ₃ O ¹⁶ H	3- 211	29, 2, ←29, 1,	Ground					19 390.18	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 397.7	.1
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 5, 3← 6, 5, 2	Ground					19 398.1	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 5, 2← 6, 5, 1	Ground					19 398.1	
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	19 398.8	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						19 400.74	.1
HC ¹² N ¹⁴	4- 291	6← 6	Excited					19 402.20	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	11, 8, 3←11, 8, 4	Ground					19 405.4	
a-Si ²⁸ H ₂ DC ¹² H:C ¹² H ₂	3- 621	2, 0, 2← 1, 0, 1	Ground					19 406.68	.10
C ¹³ O ¹⁶ F ¹⁹	4- 212	9, 9, 1← 9, 7, 2	Ground					19 411.99	.10
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	7, 4, 3← 7, 4, 4	Ground					19 412.00	.2
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	19 412.5	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	19 412.5	
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	7, 4, 3← 7, 4, 4	Ground					19 413.95	.2
P ³¹ HD ₂	4-1783	3, 2, 2← 3, 1, 2	Ground					19 415.19	.05
F ₂ ¹⁸ O ¹⁶	3- 11	4, 1, 3← 4, 0, 4	Ground					19 418.45	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	19 419.1	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	19 419.1	
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					19 420.	5.
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	6, 3, 3← 6, 2, 4	Ground					19 422.6	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 4, 3← 6, 4, 2	Ground					19 426.0	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 4, 4← 6, 4, 3	Ground					19 426.0	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 1, 1← 1, 1, 0	Ground		2		1	19 426.67	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 1, 1← 1, 1, 0	Ground		3		2	19 427.80	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	2, 1, 1← 1, 1, 0	Ground		1		0	19 429.06	
C ₆ ¹² H ₅ F ¹⁹	4-1281	35,11,24←35,11,25	Ground					19 432.8	
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	3, 1, 3← 2, 1, 2	Ground					19 433.8	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	19 434.4	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	19 434.4	
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 1, 2← 2, 1, 1	Ground		3/2		1/2	19 439.72	.05
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						19 440.	
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	9, 2, 7← 9, 2, 8	Ground					19 440.8	.1
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 1, 2← 2, 1, 1	Ground		9/2		7/2	19 441.68	.05
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	8, 6, 3← 8, 5, 4	Ground					19 443.3	
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	5, 1, 4← 4, 2, 3	Ground					19 443.8	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						19 447.26	.1
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	9, 7, 3← 9, 6, 4	Ground					19 448.4	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 3, 5← 6, 3, 4	Ground					19 449.2	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	7, 5, 3← 7, 4, 4	Ground					19 454.0	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	1, 1, 1← 0, 0, 0	Ground		3/2		3/2	19 456.39	
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	1, 1, 1← 0, 0, 0	Ground		5/2		3/2	19 459.04	
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	2, 1, 1← 1, 0, 1	Ground					19 459.8	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 1, 2← 2, 1, 1	Ground		5/2	3/2		19 460.56	.05
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4- 641	1, 1, 1← 0, 0, 0	Ground		1/2	3/2		19 461.25	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 466.3	.1
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	10, 6, 4←10, 6, 5	Ground					19 467.27	.2
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	3, 1, 2← 2, 1, 1	Ground		7/2	5/2		19 467.83	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 468.86	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 2, 2← 2, 2, 1	Ground		7/2	5/2		19 470.1	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	5, 2, 3← 5, 1, 4	Ground					19 470.3	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	6, 4, 3← 6, 3, 4	Ground					19 470.3	
a-C ¹² D ₂ H(C ¹² H ₃) ₂ Si ^b D	3- 884	2, 2, 0← 1, 1, 0	Ground					19 470.41	.10
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	10, 6, 4←10, 6, 5	Ground					19 471.22	.2
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 2, 1← 2, 2, 0	Ground		7/2	5/2		19 475.9	
a-Si ²⁸ HD ₂ C ¹² H:C ¹² H ₂	3- 623	2, 1, 1← 1, 1, 0	Ground					19 480.67	.10
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	10, 8, 3←10, 7, 4	Ground					19 480.9	
D ₂ C ¹² :C ¹² DCl ³⁵	4- 763	2, 1, 2← 1, 1, 1	Ground					19 485.95	
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	15/2	9	13/2	8	19 486.10	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	15/2	6	13/2	5	19 486.10	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	15/2	8	13/2	7	19 486.10	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	15/2	7	13/2	6	19 486.10	0.20
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 486.13	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	5, 3, 3← 5, 2, 4	Ground					19 487.1	
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	4, 2, 2← 4, 2, 3	Ground					19 487.98	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 488.29	
S ³² *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1161	2, 1, 1← 1, 1, 0	Ground					19 490.2	.1
C ¹² HDCl ³⁵ Si ²⁸ H ₃	3- 236	6, 1, 5← 6, 0, 6	Ground					19 490.20	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	4, 2, 2← 4, 2, 3	Ground					19 490.73	.2
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	9/2	3	9/2	4	19 491.88	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	3/2	0	5/2	1	19 491.88	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	9/2	6	9/2	6	19 491.88	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	9/2	5	9/2	5	19 491.88	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	9/2	4	9/2	4	19 491.88	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	3/2	1	5/2	2	19 491.88	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	3/2	3	5/2	4	19 491.88	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	3/2	2	5/2	3	19 491.88	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	13/2	7	11/2	6	19 491.88	0.20
C ¹² HCl ₂ ³⁵ Cl ³⁷	4- 262	3, 3, 0← 2, 2, 0	Ground					19 492.81	.17
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	4, 1, 3← 4, 0, 4	Ground					19 495.3	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	4, 2, 3← 4, 1, 4	Ground					19 495.3	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	3, 0, 3← 2, 1, 2	Ground					19 495.3	
C ¹² D ₃ C ¹² O ¹⁶ H	3- 492	6, 4, 2← 6, 3, 3	Ground					19 495.85	
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	13/2	8	11/2	7	19 496.29	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	13/2	6	11/2	5	19 496.29	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Excited	13/2	5	11/2	4	19 496.29	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
D ₂ C ¹² ;C ¹² DCI ³⁵	4- 763	2, 1, 2← 1, 1, 1	Ground		7/2		5/2	19 500.15	.2
C ¹² ₂ D;C ¹² DC ¹² D;C ¹² DN ¹⁴ ₂ H	4-1185	5, 4, 2← 5, 3, 3	Ground					19 501.5	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 502.92	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 509.18	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 510.4	.1
C ¹² ₂ DN ¹⁴ C ¹² DC ¹² H;C ¹² DN ¹⁴ ₂	4-1142	3, 1, 3← 2, 0, 2	Ground					19 510.6	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	19 511.0	
C ¹² H ₃ Cl ³⁵	4-1271	7, 2, 6← 6, 2, 5	Ground					19 513.4	
C ¹² D ₃ C ¹³ ;C ¹² C ¹² F ₃ ¹⁹	3- 895	8, ← 7,	Ground					19 516.0	.5
c-Si ²⁸ H ₃ C ¹² H;C ¹² HD	3- 617	2, 0, 2← 1, 0, 1	Ground					19 517.07	.10
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	19 517.5	
Si ²⁹ H ₃ C ¹² H;C ¹² H ₂	3- 613	2, 1, 2← 1, 1, 1	Ground					19 523.22	.10
C ¹² ₂ HC ¹² D;C ¹² HC ¹² H;C ¹² HN ¹⁴ ₂	4-1203	2, 1, 1← 1, 1, 0	Ground					19 523.6	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	19 524.7	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	19 524.7	
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	9/2	6	7/2	5	19 526.26	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	9/2	5	7/2	4	19 526.26	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	9/2	4	7/2	3	19 527.77	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	9/2	3	7/2	2	19 527.77	0.20
C ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 3, 4← 6, 3, 3	Ground					19 534.8	
C ¹² H ₅ F ¹⁹	4-1281	17, 5,12←17, 5,13	Ground					19 535.1	
C ¹² ₂ DC ¹² H;C ¹² HC ¹² H;C ¹² HN ¹⁴ ₂	4-1202	2, 1, 1← 1, 1, 0	Ground					19 537.4	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	3, 1, 3← 2, 1, 2	Ground					19 537.93	.2
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	5/2	2	5/2	2	19 539.67	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	5/2	1	5/2	1	19 539.67	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	5/2	3	5/2	3	19 539.67	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	5/2	4	5/2	4	19 539.67	0.20
C ¹² ₂ H;C ¹² HC ¹² H;C ¹² HN ¹⁴ ₂ D	4-1182	5, 3, 2← 5, 3, 3	Ground					19 540.4	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	19 543.2	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	19 543.2	
C ¹³ H ₃ N ¹⁴ C ¹²	4- 832	1, 0← 0, 0	Ground					19 543.4	.3
s-C ¹² D ₂ H(C ¹² H ₃) ₂ Si ^b D	3- 883	2, 2, 0← 1, 1, 0	Ground					19 544.30	.10
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	4, 1, 3← 4, 0, 4	Ground					19 548.66	
C ¹³ ₂ HC ¹² H;C ¹² HC ¹² H;C ¹² HN ¹⁴ ₂	4-1205	11, 8, 3←11, 8, 4	Ground					19 549.9	
C ¹² ₂ DN ¹⁴ C ¹² DC ¹² H;C ¹² DN ¹⁴ ₂	4-1142	11, 9, 3←11, 8, 4	Ground					19 557.3	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 559.0	
s-C ¹² H ₂ DSi ^b H ₂ D	3- 332	1, , ← 0, ,						19 559.2	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 560.95	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 561.4	
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	7	9/2	6	19 563.97	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	6	9/2	5	19 563.97	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	5	9/2	4	19 563.97	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	4	9/2	3	19 563.97	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	4	11/2	4	19 563.97	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	6	11/2	6	19 563.97	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	5	11/2	5	19 563.97	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	7	11/2	7	19 563.97	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	4	9/2	3	19 565.84	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	7	9/2	6	19 565.84	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	6	9/2	5	19 565.84	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	5	9/2	4	19 565.84	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	5	11/2	5	19 565.84	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	6	11/2	6	19 565.84	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	7	11/2	7	19 565.84	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	11/2	4	11/2	4	19 565.84	0.20
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 568.3	.1
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	7/2	5	7/2	5	19 570.25	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	7/2	3	7/2	3	19 570.25	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	7/2	2	7/2	2	19 570.25	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	7/2	4	7/2	4	19 570.25	0.20
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	5, 3, 2← 5, 3, 3	Ground					19 572.5	
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	6, 1, 5← 6, 1, 6	Ground					19 573.03	.10
C ¹² *HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	11, 8, 3←11, 8, 4	Ground					19 573.1	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 576.	5.
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	15/2	8	13/2	7	19 578.36	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	15/2	9	13/2	8	19 578.36	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	15/2	7	13/2	6	19 578.36	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	15/2	6	13/2	5	19 578.36	0.20
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	4, 1, 3← 4, 0, 4	Ground					19 581.70	.1
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	2, 2, 0← 1, 1, 0	Ground					19 582.6	.3
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	3/2	0	5/2	1	19 584.56	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	9/2	6	9/2	6	19 584.56	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	9/2	5	9/2	5	19 584.56	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	9/2	4	9/2	4	19 584.56	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	9/2	3	9/2	3	19 584.56	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	3/2	1	5/2	2	19 584.56	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	3/2	3	5/2	4	19 584.56	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	3/2	2	5/2	3	19 584.56	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	13/2	7	11/2	6	19 584.56	0.20
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	19 586.1	
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	13/2	5	11/2	4	19 589.08	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	13/2	8	11/2	7	19 589.08	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	13/2	6	11/2	5	19 589.08	0.20
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	19 589.8	
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						19 590.	
Si ²⁸ H ₃ C ¹² H:C ¹³ H ₂	3- 624	2, 0, 2← 1, 0, 1	Ground					19 590.25	.10
HC ¹² HO ¹⁶	4- 381	25, 4, 21←25, 4, 22	Ground					19 595.23	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	10, 10, 1←10, 8, 2	Ground					19 595.29	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 3, 6← 7, 4, 3	Ground					19 598.51	.1
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	7, 1, 6← 7, 0, 7	Ground					19 601.55	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					19 602.38	.1
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	2, 1, 1← 1, 1, 0	Ground					19 602.54	.1
(C ¹² D ₃) ₂ O ¹⁶	3- 592	2, 1, 1← 2, 0, 2	Ground					19 603.2	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 3, 6← 7, 4, 3	Ground					19 603.72	.1
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	1, 0, 1← 0, 0, 0	Ground					19 606.11	.1
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					19 607.1	.2
a-C ¹² H ₂ DSi ^b H ₂ D	3- 333	1, , ← 0, ,						19 607.85	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	15,10, ←16, 9,	Ground					19 608.29	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	15,10, ←16, 9,	Ground					19 608.64	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	15,10, ←16, 9,	Ground					19 609.28	.1
Si ²⁸ H ₃ C ¹³ H:C ¹² H ₂	3- 615	2, 1, 2← 1, 1, 1	Ground					19 611.24	.10
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁸¹	4- 46	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	19 611.7	
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁸¹	4- 46	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	19 611.7	
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² Cl ³⁵	3-1061	11, ←10,	Ground					19 617.1	.5
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 619.86	
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	5/2	1	7/2	2	19 621.36	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	5/2	2	7/2	3	19 621.36	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	5/2	3	7/2	4	19 621.36	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	5/2	4	7/2	5	19 621.36	0.20
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	1, 0, 1← 0, 0, 0	Excited					19 621.6	
C ¹² F ¹⁹ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ H	3- 661	17, , ←16, ,	Ground					19 621.8	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						19 624.74	.1
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	7/2	4	9/2	5	19 628.75	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	7/2	2	9/2	3	19 628.75	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	7/2	5	9/2	6	19 628.75	0.20
In ¹¹⁵ Cl ³⁵	1-	3← 2	Ground	7/2	3	9/2	4	19 628.75	0.20
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	7, 4, 3← 7, 4, 4	Ground					19 628.8	.1
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	3, 1, 2← 2, 2, 1	Ground					19 629.0	.1
C ¹² D ₃ C ¹² :C ¹² C ¹³ F ¹⁹ ₃	3- 896	8, ← 7,	Ground					19 631.0	.5
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	7, 4, 3← 7, 4, 4	Ground					19 631.7	.1
Br ⁸¹ F ¹⁹ ₃	4- 82	2, 1, 2← 1, 0, 1	Ground		7/2		5/2	19 633.95	
(C ¹² H ₃) ₂ C ¹² :C ¹² HD	3- 944	3, 1, 2← 3, 0, 3	Ground					19 639.41	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						19 640.67	.1
C ¹² HCl ³⁵ Cl ³⁷	4- 262	3, 3, 1← 2, 2, 1	Ground					19 643.13	.01
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	2, 1, 2← 1, 1, 1	Ground		5/2		3/2	19 643.6	.05
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	2, 1, 2← 1, 1, 1	Ground		5/2		5/2	19 646.4	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 647.	5.
C ¹² *H ₂ C ¹² D:C ¹² *D	4-1033	11, 8, 3←11, 8, 4	Ground					19 647.9	
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					19 650.	20.
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	2, 1, 2← 1, 1, 1	Ground		3/2		3/2	19 650.0	.05
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	2, 1, 2← 1, 1, 1	Ground		7/2		5/2	19 655.4	.05
C ¹² H ₃ C ¹² HDF ¹⁹	3- 552	2, 2, 0← 3, 1, 3	Ground					19 657.6	.1
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	7, 5, 2← 7, 4, 3	Ground					19 658.9	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	32,16, ←31,17,	Ground					19 658.93	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	32,16, ←31,17,	Ground					19 659.50	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			19 659.54	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	32,16, ←31,17,	Ground					19 659.80	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	3, 1, 3← 2, 1, 2	Ground					19 659.98	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					19 660.31	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						19 660.9	.3
C ¹³ H ₃ C ¹² H ₂ F ¹⁹	3- 556	3, 2, 1← 4, 1, 4	Ground					19 663.2	.1
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			19 663.44	.05
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	3, 0, 3← 2, 1, 2	Ground					19 663.69	.05
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	2, 1, 2← 1, 1, 1	Ground	1/2	1/2			19 664.2	.05
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	3, 0, 3← 2, 1, 2	Ground					19 664.24	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 2← 1, 1, 1	Ground	3/2	3/2			19 665.87	.05
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	8, 2, 6← 8, 1, 7	Ground					19 666.15	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	10, 9, 1←10, 8, 2	Ground					19 666.2	
C ¹² D ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 892	8, ← 7,	Ground					19 666.3	.1
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	8, 2, 6← 8, 1, 7	Ground					19 667.05	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	8, 3, 5← 8, 2, 6	Ground	17/2	17/2			19 667.25	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	8, 3, 5← 8, 2, 6	Ground	13/2	13/2			19 667.25	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	8, 3, 5← 8, 2, 6	Ground	19/2	19/2			19 667.25	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	8, 3, 5← 8, 2, 6	Ground	15/2	15/2			19 667.25	
Br ⁷⁹ F ₃ ¹⁹	4- 81	2, 1, 2← 1, 0, 1	Ground	7/2	5/2			19 667.92	
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	8, 2, 6← 8, 1, 7	Ground					19 667.94	.2
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 2← 1, 1, 1	Ground					19 669.02	.05
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	4, 2, 2← 4, 1, 3	Ground					19 669.25	.05
C ¹² H ₃ C ¹² HDC ¹² H ₃	3- 784	2, 1, 1← 2, 0, 2	Ground					19 670.78	.06
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			19 672.38	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 672.93	
C ₆ H ₅ F ¹⁹	4-1281	5, 0, 5← 4, 0, 4	Ground					19 678.2	.1
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	11, 8, 3←11, 8, 4	Ground					19 681.4	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 2← 1, 1, 1	Ground	1/2	1/2			19 681.83	.05
S ₃ ³² O ¹⁶	4-1821	2, 1, 1← 1, 1, 0	Ground					19 684.3	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						19 687.12	.1
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	6, 1, 5← 6, 0, 6	Ground					19 688.76	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	9, 2, 7← 9, 2, 8	Ground					19 693.37	.10
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	12,10, 3←12, 9, 4	Ground					19 693.7	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	9, 2, 7← 9, 2, 8	Ground					19 694.15	.10
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	5, 1, 4← 5, 1, 5	Ground					19 697.49	.35
C ¹² H ₃ N ¹⁴ C ¹² S ³⁴	3- 425	4, , ← 3, ,	Ground					19 700.	
N ¹⁵ H ₃	4-1772	8, 6← 8, 6	Ground					19 701.99	.06
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 6←26,19, 7	Ground	53/2	53/2			19 702.69	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,20, 6←26,20, 7	Ground	53/2	53/2			19 702.69	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 702.9	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,20, 6←26,20, 7	Ground	53/2	53/2			19 703.62	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,20, 6←26,20, 7	Ground	51/2	51/2			19 703.62	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 6←26,19, 7	Ground	53/2	53/2			19 703.62	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 6←26,19, 7	Ground	51/2	51/2			19 703.62	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,20, 6←26,20, 7	Ground	51/2		51/2		19 704.87	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 6←26,19, 7	Ground	51/2		51/2		19 704.87	.05
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	4, 2, 2← 4, 2, 3	Ground					19 705.1	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 6←26,19, 7	Ground	49/2		49/2		19 706.70	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,20, 6←26,20, 7	Ground	49/2		49/2		19 706.70	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 6←26,19, 7	Ground	55/2		55/2		19 707.62	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,20, 6←26,20, 7	Ground	49/2		49/2		19 707.62	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,20, 6←26,20, 7	Ground	55/2		55/2		19 707.62	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 6←26,19, 7	Ground	49/2		49/2		19 707.62	.05
N ¹⁵ H ₃	4-1772	9, 7← 9, 7	Ground					19 708.24	.04
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,21, 6←26,19, 7	Ground	55/2		55/2		19 708.87	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	26,20, 6←26,20, 7	Ground	55/2		55/2		19 708.87	.05
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	4, 4, 1← 4, 2, 2	Ground					19 710.9	.3
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 713.5	.1
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		19 715.7	
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		19 715.7	
H ₂ C ¹² :C ¹³ HF ¹⁹	4- 783	1, 0, 1← 0, 0, 0	Ground					19 717.80	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,19, 6←25,19, 7	Ground	51/2		51/2		19 718.14	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 6←25,18, 7	Ground	51/2		51/2		19 718.14	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 719.	5.
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,19, 6←25,19, 7	Ground	51/2		51/2		19 719.24	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 6←25,18, 7	Ground	51/2		51/2		19 719.24	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 6←25,18, 7	Ground	49/2		49/2		19 719.24	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,19, 6←25,19, 7	Ground	49/2		49/2		19 719.24	.05
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					19 720.	20.
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,19, 6←25,19, 7	Ground	49/2		49/2		19 720.54	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 6←25,18, 7	Ground	49/2		49/2		19 720.54	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 6←25,18, 7	Ground	47/2		47/2		19 722.36	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,19, 6←25,19, 7	Ground	47/2		47/2		19 722.36	.05
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						19 723.3	.3
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 6←25,18, 7	Ground	47/2		47/2		19 723.46	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,19, 6←25,19, 7	Ground	47/2		47/2		19 723.46	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,19, 6←25,19, 7	Ground	53/2		53/2		19 723.46	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					19 724.62	.04
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,19, 6←25,19, 7	Ground	53/2		53/2		19 724.74	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	25,20, 6←25,18, 7	Ground	53/2		53/2		19 724.74	.05
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	4, ← 3,	Ground					19 725.17	.01
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						19 726.5	.3
a-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 942	3, 2, 2← 3, 1, 3	Ground					19 730.99	.05
C ¹² DF ₃ ¹⁹	4- 283	1, ← 0,	Excited					19 731.29	.10
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,18, 6←24,18, 7	Ground	49/2		49/2		19 732.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 6←24,17, 7	Ground	49/2		49/2		19 732.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 6←24,17, 7	Ground	49/2		49/2		19 733.79	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 6←24,17, 7	Ground	47/2		47/2		19 733.79	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,18, 6←24,18, 7	Ground	47/2		47/2		19 733.79	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,18, 6←24,18, 7	Ground	49/2	49/2			19 733.79	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,18, 6←24,18, 7	Ground	47/2	47/2			19 734.90	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 6←24,17, 7	Ground	47/2	47/2			19 734.90	.05
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	7, 7, 0← 7, 6, 1	Ground					19 736.70	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,18, 6←24,18, 7	Ground	45/2	45/2			19 736.79	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 6←24,17, 7	Ground	45/2	45/2			19 736.79	.05
a-C ¹² H ₂ D(C ¹² H ₃) ₂ Si ^b D	3- 882	2, 1, 1← 1, 0, 1	Ground					19 736.85	.10
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	7, 7, 0← 7, 6, 1	Ground					19 737.40	
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 1, 2← 1, 1, 1	Ground					19 737.64	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,18, 6←24,18, 7	Ground	45/2	45/2			19 738.29	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,18, 6←24,18, 7	Ground	51/2	51/2			19 738.29	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 6←24,17, 7	Ground	51/2	51/2			19 738.29	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 6←24,17, 7	Ground	45/2	45/2			19 738.29	.05
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 1, 2← 1, 1, 1	Ground					19 738.6	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	1, 0, 1← 0, 0, 0	Excited					19 738.83	.05
Br ⁸¹ F ₃ ¹⁹	4- 82	2, 1, 2← 1, 0, 1	Ground	5/2	3/2			19 739.27	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,18, 6←24,18, 7	Ground	51/2	51/2			19 739.39	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	24,19, 6←24,17, 7	Ground	51/2	51/2			19 739.39	.05
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹³ D	3-1075	4, ← 3,	Ground					19 740.3	.1
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	3, 2, 1← 3, 1, 2	Ground					19 742.81	.05
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	4, 1, 3← 4, 0, 4	Ground					19 744.04	.2
D ₂ C ¹² :C ¹² DCI ³⁷	4- 765	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			19 744.98	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 6←23,16, 7	Ground	47/2	47/2			19 745.16	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,17, 6←23,17, 7	Ground	47/2	47/2			19 745.16	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 6←23,16, 7	Ground	47/2	47/2			19 746.89	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,17, 6←23,17, 7	Ground	47/2	47/2			19 746.89	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 6←23,16, 7	Ground	45/2	45/2			19 746.89	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,17, 6←23,17, 7	Ground	45/2	45/2			19 746.89	.05
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	5, 3, 2← 5, 2, 3	Ground					19 747.0	1.
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 6←23,16, 7	Ground	45/2	45/2			19 747.82	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,17, 6←23,17, 7	Ground	45/2	45/2			19 747.82	.05
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	11, 5, 7←11, 5, 6	Ground					19 749.1	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,17, 6←23,17, 7	Ground	43/2	43/2			19 749.81	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 6←23,16, 7	Ground	43/2	43/2			19 749.81	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,17, 6←23,17, 7	Ground	43/2	43/2			19 751.49	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,17, 6←23,17, 7	Ground	49/2	49/2			19 751.49	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 6←23,16, 7	Ground	43/2	43/2			19 751.49	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 6←23,16, 7	Ground	49/2	49/2			19 751.49	.05
Si ³⁰ H ₃ C ¹² H:C ¹² H ₂	3- 614	2, 0, 2← 1, 0, 1	Ground					19 751.60	.10
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,18, 6←23,16, 7	Ground	49/2	49/2			19 752.44	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	23,17, 6←23,17, 7	Ground	49/2	49/2			19 752.44	.05
s-Si ²⁸ H ₂ DC ¹² H:C ¹² H ₂	3- 619	2, 0, 2← 1, 0, 1	Ground					19 752.92	.10
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	7, 1, 7← 6, 1, 6	Ground					19 753.23	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	1, 0, 1← 0, 0, 0	Ground					19 755.01	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 6←22,15, 7	Ground	45/2	45/2			19 756.43	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,16, 6←22,16, 7	Ground	45/2	45/2			19 756.43	.05
N ¹⁴ H ₃	4-1771	6, 3← 6, 3	Ground				W	19 757.40	.04
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,16, 6←22,16, 7	Ground	43/2	43/2			19 758.40	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,16, 6←22,16, 7	Ground	45/2	45/2			19 758.40	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 6←22,15, 7	Ground	43/2	43/2			19 758.40	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 6←22,15, 7	Ground	45/2	45/2			19 758.40	.05
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			19 759.0	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,16, 6←22,16, 7	Ground	43/2	43/2			19 759.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 6←22,15, 7	Ground	43/2	43/2			19 759.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,16, 6←22,16, 7	Ground	41/2	41/2			19 761.35	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 6←22,15, 7	Ground	41/2	41/2			19 761.35	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,16, 6←22,16, 7	Ground	41/2	41/2			19 763.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 6←22,15, 7	Ground	41/2	41/2			19 763.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,16, 6←22,16, 7	Ground	47/2	47/2			19 763.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 6←22,15, 7	Ground	47/2	47/2			19 763.34	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,17, 6←22,15, 7	Ground	47/2	47/2			19 764.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	22,16, 6←22,16, 7	Ground	47/2	47/2			19 764.30	.05
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	3, 1, 2← 3, 0, 3	Ground					19 764.88	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	12,10, 2←12,10, 3	Ground					19 767.98	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	21,15, 6←21,15, 7	Ground	43/2	43/2			19 768.51	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	21,16, 6←21,14, 7	Ground	43/2	43/2			19 768.51	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	21,16, 6←21,14, 7	Ground	41/2	41/2			19 768.95	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	21,15, 6←21,15, 7	Ground	41/2	41/2			19 768.95	.05
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			19 772.27	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	21,15, 6←21,15, 7	Ground	45/2	45/2			19 773.93	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	21,16, 6←21,14, 7	Ground	45/2	45/2			19 773.93	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	21,16, 6←21,14, 7	Ground	39/2	39/2			19 774.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	21,15, 6←21,15, 7	Ground	39/2	39/2			19 774.22	.05
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	3, 1, 2← 2, 1, 1	Ground	7/2	5/2			19 774.5	
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			19 775.61	.05
a-Si ²⁸ H ₂ DC ¹² H:C ¹² H ₂	3- 621	2, 1, 1← 1, 1, 0	Ground					19 775.85	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					19 776.01	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,14, 6←20,14, 7	Ground	41/2	41/2			19 777.80	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 6←20,13, 7	Ground	41/2	41/2			19 777.80	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					19 777.85	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	12,11, 1←12,10, 2	Ground					19 778.1	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 6←20,13, 7	Ground	39/2	39/2			19 778.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,14, 6←20,14, 7	Ground	39/2	39/2			19 778.22	.05
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 2← 1, 1, 1	Ground	3/2	3/2			19 778.66	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 6←20,13, 7	Ground	43/2	43/2			19 783.53	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,14, 6←20,14, 7	Ground	43/2	43/2			19 783.53	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,14, 6←20,14, 7	Ground	37/2	37/2			19 783.93	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	20,15, 6←20,13, 7	Ground	37/2	37/2			19 783.93	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² ₃ H ₂ C ¹² H:C ¹² *H	4-1031	12, 7, 5←12, 7, 6	Ground					19 784.3	
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		19 784.42	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	4, 1, 3← 4, 0, 4	Ground					19 785.23	
s-C ¹² H ₂ D(C ¹² H ₃) ₂ Si ^b D	3- 881	2, 1, 1← 1, 0, 1	Ground					19 787.30	.10
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	10, 2, 8←10, 2, 9	Ground					19 793.05	.10
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		19 793.4	.05
N ¹⁵ H ₃	4-1772	7, 5← 7, 5	Ground					19 793.45	.06
Br ⁷⁹ F ¹⁹ ₃	4- 81	2, 1, 2← 1, 0, 1	Ground	5/2		3/2		19 793.83	
C ¹² H ₃ N ¹⁴ O ¹⁶ ₂	3- 171	Not Reported	Ground					19 794.	5.
C ₆ ¹² H ₅ Cl ³⁵	4-1271	7, 3, 5← 6, 3, 4	Ground					19 797.9	
C ¹³ DF ¹⁹ ₃	4- 284	1, ← 0,	Ground					19 798.67	.10
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	17,12, 6←17,10, 7	Ground	35/2		35/2		19 799.25	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	17,11, 6←17,11, 7	Ground	35/2		35/2		19 799.25	.05
C ₆ ¹² H ₅ Cl ³⁵	4-1271	7, 3, 5← 6, 3, 4	Ground					19 800.7	
C ¹² DF ¹⁹ ₃	4- 283	1, ← 0,	Excited					19 800.96	.10
C ¹² HCl ³⁵ ₃	4- 261	3, 2← 2, 2	Ground					19 801.23	
Si ²⁸ H ₃ C ¹² D:C ¹² H ₂	3- 616	2, 0, 2← 1, 0, 1	Ground					19 801.56	.10
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	8, 1, 7← 8, 0, 8	Ground					19 801.74	.2
C ¹² HCl ³⁵ ₃	4- 261	3, 2← 2, 2	Ground					19 802.67	.14
C ¹² HCl ³⁵ ₃	4- 261	3, 2← 2, 2	Ground					19 803.70	.16
C ¹² HCl ³⁵ ₃	4- 261	3, 2← 2, 2	Ground					19 804.43	.16
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	16,10, 6←16,10, 7	Ground	33/2		33/2		19 804.60	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	16,11, 6←16, 9, 7	Ground	33/2		33/2		19 804.60	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 804.8	
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	16,10, 6←16,10, 7	Ground	31/2		31/2		19 805.38	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	16,11, 6←16, 9, 7	Ground	31/2		31/2		19 805.38	.05
C ¹² HCl ³⁵ ₃	4- 261	Not Reported	Ground					19 805.57	.14
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 806.06	
C ¹² HCl ³⁵ ₃	4- 261	Not Reported	Ground					19 806.21	
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	17,12, 6←17,10, 7	Ground	37/2		37/2		19 806.78	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	17,11, 6←17,11, 7	Ground	37/2		37/2		19 806.78	.05
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	11,11, 1←11, 9, 2	Ground					19 806.8	
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	17,11, 6←17,11, 7	Ground	31/2		31/2		19 807.40	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	17,12, 6←17,10, 7	Ground	31/2		31/2		19 807.40	.05
C ¹² HCl ³⁵ ₃	4- 261	3, 1← 2, 1	Ground					19 808.28	.12
a-C ¹² D ₂ H(C ¹² H ₃) ₂ Si ^b D	3- 884	2, 2, 1← 1, 1, 1	Ground					19 808.32	.10
c-HF ¹⁹ C ¹² :C ¹³ HF ¹⁹	4- 692	3, 1, 2← 3, 0, 3	Ground					19 808.46	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	15, 9, 6←15, 9, 7	Ground	31/2		31/2		19 809.09	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	15,10, 6←15, 8, 7	Ground	31/2		31/2		19 809.09	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	15,10, 6←15, 8, 7	Ground	29/2		29/2		19 809.94	.05
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	15, 9, 6←15, 9, 7	Ground	29/2		29/2		19 809.94	.05
C ¹² DF ¹⁹ ₃	4- 283	1, ← 0,	Excited					19 810.30	.10
C ¹² HCl ³⁵ ₃	4- 261	3, 2← 2, 2	Ground					19 810.57	.05
N ¹⁵ H ₃	4-1772	10, 8←10, 8	Ground					19 810.86	.06
C ¹² DF ¹⁹ ₃	4- 283	1, ← 0,	Excited					19 811.26	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,10, 6←16,10, 7	Ground	35/2		35/2		19 812.87	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,11, 6←16, 9, 7	Ground	35/2		35/2		19 812.87	.05
C ¹² HCl ₃ ³⁵	4- 261	3, ← 2,	Ground					19 812.92	.10
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	12, 9, 3←12, 9, 4	Ground					19 813.4	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,11, 6←16, 9, 7	Ground	29/2		29/2		19 813.68	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	16,10, 6←16,10, 7	Ground	29/2		29/2		19 813.68	.05
C ¹² HCl ₃ ³⁵	4- 261	3, ← 2,	Ground					19 814.95	.10
C ¹² HCl ₃ ³⁵	4- 261	3, ← 2,	Ground					19 816.76	.14
C ¹² HCl ₃ ³⁵	4- 261	3, ← 2,	Ground					19 817.66	.13
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	12, 9, 3←12, 9, 4	Ground					19 818.0	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	15,10, 6←15, 8, 7	Ground	33/2		33/2		19 818.39	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	15, 9, 6←15, 9, 7	Ground	33/2		33/2		19 818.39	.05
C ¹² HCl ₃ ³⁵	4- 261	3, ← 2,	Ground					19 818.73	.17
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	2, 1, 2← 1, 1, 1	Ground					19 818.74	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	15,10, 6←15, 8, 7	Ground	27/2		27/2		19 819.38	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	15, 9, 6←15, 9, 7	Ground	27/2		27/2		19 819.38	.05
C ¹² HCl ₃ ³⁵	4- 261	3, ← 2,	Ground					19 819.65	.17
C ¹² HCl ₃ ³⁵	4- 261	3, 2← 2, 2	Ground					19 821.00	.10
C ¹² HCl ₃ ³⁵	4- 261	3, 2← 2, 2	Ground					19 822.19	.12
C ¹² HCl ₃ ³⁵	4- 261	3, 2← 2, 2	Ground					19 823.08	.17
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	14, 8, 6←14, 8, 7	Ground	31/2		31/2		19 823.39	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	14, 9, 6←14, 7, 7	Ground	31/2		31/2		19 823.39	.05
C ¹² DF ₃ ¹⁹	4- 283	1, ← 0,	Excited					19 823.40	.10
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	14, 8, 6←14, 8, 7	Ground	25/2		25/2		19 824.47	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	14, 9, 6←14, 7, 7	Ground	25/2		25/2		19 824.47	.05
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	2, 1, 1← 2, 0, 2	Ground					19 824.84	.10
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	7, 2, 5← 7, 1, 6	Ground					19 824.98	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	13, 7, 6←13, 7, 7	Ground	29/2		29/2		19 827.98	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	13, 8, 6←13, 6, 7	Ground	29/2		29/2		19 827.98	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					19 828.	5.
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	7, 2, 5← 7, 1, 6	Ground					19 828.54	.2
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	6, 3, 3← 6, 3, 4	Ground					19 828.8	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	13, 8, 6←13, 6, 7	Ground	23/2		23/2		19 829.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	13, 7, 6←13, 7, 7	Ground	23/2		23/2		19 829.30	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 6, 6←12, 6, 7	Ground	27/2		27/2		19 832.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 7, 6←12, 5, 7	Ground	27/2		27/2		19 832.22	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 7, 6←12, 5, 7	Ground	21/2		21/2		19 833.84	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	12, 6, 6←12, 6, 7	Ground	21/2		21/2		19 833.84	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 6, 6←11, 4, 7	Ground	19/2		19/2		19 834.67	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 5, 6←11, 5, 7	Ground	19/2		19/2		19 834.67	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 6, 6←11, 4, 7	Ground	25/2		25/2		19 836.16	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 5, 6←11, 5, 7	Ground	25/2		25/2		19 836.16	.05
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	8, 3, 5← 8, 2, 6	Ground	19/2		19/2		19 836.38	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	8, 3, 5← 8, 2, 6	Ground	13/2		13/2		19 836.38	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	8, 3, 5← 8, 2, 6	Ground	17/2		17/2		19 837.06	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ C ¹² O ¹⁶ C ¹³⁵	3- 363	8, 3, 5← 8, 2, 6	Ground	15/2	15/2			19 837.06	
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 5, 6←11, 5, 7	Ground	19/2	19/2			19 838.21	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 6, 6←11, 4, 7	Ground	19/2	19/2			19 838.21	.05
N ¹⁴ H ₃	4-1771	5, 1← 5, 1	Ground					19 838.26	.02
N ¹⁴ H ₃	4-1771	5, 1← 5, 1	Ground					19 838.41	.02
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 4, 6←10, 4, 7	Ground	17/2	17/2			19 839.13	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 5, 6←11, 5, 7	Ground	19/2	19/2			19 839.13	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 5, 6←10, 3, 7	Ground	17/2	17/2			19 839.13	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	11, 6, 6←11, 4, 7	Ground	19/2	19/2			19 839.13	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 4, 6←10, 4, 7	Ground	23/2	23/2			19 839.97	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 5, 6←10, 3, 7	Ground	23/2	23/2			19 839.97	.05
C ¹² DF ₃ ¹⁹	4- 283	1, ← 0,	Ground					19 842.21	.10
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 4, 6←10, 4, 7	Ground	17/2	17/2			19 842.75	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 5, 6←10, 3, 7	Ground	17/2	17/2			19 842.75	.05
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	10,10, 1←10, 8, 2	Ground					19 843.06	.10
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	6, 3, 3← 6, 3, 4	Ground					19 843.5	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 5, 6←10, 3, 7	Ground	17/2	17/2			19 843.71	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	10, 4, 6←10, 4, 7	Ground	17/2	17/2			19 843.71	.05
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					19 844.8	.5
C ¹² DF ₃ ¹⁹	4- 283	1, ← 0,	Excited					19 846.16	.10
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	2, 0, 2← 1, 0, 1	Ground					19 846.45	.2
c-HDN ¹⁵ C ¹² HO ¹⁶	3- 158	1, 0, 1← 0, 0, 0	Ground					19 846.70	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 847.4	.1
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	6, 5, 2← 6, 4, 3	Ground					19 848.7	
C ¹² DF ₃ ¹⁹	4- 283	1, ← 0,	Excited					19 850.13	.10
C ¹² DF ₃ ¹⁹	4- 283	1, ← 0,	Excited					19 851.33	.10
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	5, 5, 1← 5, 4, 2	Ground					19 851.7	
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 1, 2← 1, 1, 1	Ground					19 853.9	.05
D ₂ O ₂ ¹⁶	3- 42	Not Reported						19 854.	3.
C ¹² DF ₃ ¹⁹	4- 283	1, ← 0,	Excited					19 854.13	.10
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	12,11, 1←12,11, 2	Ground					19 860.	10.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 862.9	.1
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	2, 2, 1← 1, 1, 0	Ground					19 863.7	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			19 867.6	
C ^b H ₂ ^b CP ^b F ^b	4- 333	Not Reported						19 868.76	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 874.46	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 875.04	
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	2, 1, 1← 1, 1, 0	Ground					19 876.68	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 878.	5.
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	3, 1, 2← 2, 1, 1	Ground	7/2	5/2			19 885.8	
s-C ¹² D ₂ H(C ¹² H ₃) ₂ Si ^b D	3- 883	2, 2, 1← 1, 1, 1	Ground					19 892.55	.10
C ₆ ¹² H ₅ Cl ³⁵	4-1271	7, 3, 4← 6, 3, 3	Ground					19 893.5	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	7, 3, 4← 6, 3, 3	Ground					19 895.8	
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	10, 7, 3←10, 7, 4	Ground					19 898.3	
C ¹² HD ₂ C ¹² HDF ¹⁹	3- 558	2, 1, 1← 2, 0, 2	Ground					19 898.9	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					19 902.9	.1
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					19 905.8	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 912.2	.1
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	6, 4, 2← 6, 3, 3	Ground					19 914.7	.1
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	20, 2,19←19, 3,16	Ground					19 917.48	.1
F ¹⁹ N ¹⁴ N ¹⁴ F ¹⁹	3- 21	2, 2, 1← 1, 1, 1	Ground					19 917.9	.2
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	20, 2,19←19, 3,16	Ground					19 919.07	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					19 919.56	.04
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 1← 1, 1, 0	Ground	5/2		3/2		19 923.90	.05
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	3, 0, 3← 2, 0, 2	Ground					19 925.3	.1
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		19 926.35	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 0, 3← 2, 1, 2	Ground	7/2		5/2		19 926.80	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 0, 3← 2, 1, 2	Ground	5/2		3/2		19 928.25	.2
C ¹² H ₃ N ¹⁴ C ¹² S ³⁴	3- 425	4, , ← 3, ,						19 929.	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 0, 3← 2, 1, 2	Ground	5/2		5/2		19 932.10	.2
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 1← 1, 1, 0	Ground	5/2		5/2		19 932.95	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					19 933.82	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 0, 3← 2, 1, 2	Ground	9/2		7/2		19 934.00	.2
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	7, 2, 5← 7, 1, 6	Ground					19 935.72	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 0, 3← 2, 1, 2	Ground	3/2		1/2		19 936.00	.2
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		19 936.20	.05
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	7, 2, 5← 7, 1, 6	Ground					19 939.43	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	4, 4, 1← 4, 2, 2	Ground					19 939.7	
Si ³⁰ D ₂ F ¹⁹	4-1605	4, 1, 3← 4, 0, 4	Ground					19 940.69	.10
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 0, 3← 2, 1, 2	Ground	3/2		3/2		19 941.80	.2
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		19 942.45	.05
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	6, 4, 2← 6, 3, 3	Ground					19 942.6	
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁸¹	4- 46	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		19 942.8	
(C ¹² H ₃) ₂ C ¹² :C ¹² HD	3- 944	3, 1, 2← 3, 1, 3	Ground					19 944.54	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						19 945.6	
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		19 945.95	.05
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	4, 2, 2← 4, 1, 3	Ground					19 947.74	
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	3, 1, 3← 2, 1, 2	Ground					19 950.7	.1
C ₆ H ₅ F ¹⁹	4-1281	7, 1, 6← 7, 1, 7	Ground					19 953.0	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						19 955.	.5
Si ²⁹ D ₂ F ¹⁹	4-1604	4, 1, 3← 4, 0, 4	Ground					19 955.10	.10
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁸¹	4- 46	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		19 958.6	
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	3, 1, 3← 2, 0, 2	Ground	5/2		3/2		19 961.4	.5
s-C ¹² H ₂ D(C ¹² H ₃) ₂ Si ^b D	3- 881	2, 2, 0← 1, 1, 0	Ground					19 962.62	.10
Si ²⁹ H ₃ C ¹² H:C ¹² H ₂	3- 613	2, 0, 2← 1, 0, 1	Ground					19 962.92	.10
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	3, 1, 3← 2, 0, 2	Ground	9/2		7/2		19 964.0	.5
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	3, 1, 3← 2, 0, 2	Ground	7/2		5/2		19 965.3	.5
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	7, 1, 6← 7, 0, 7	Ground	11/2		11/2		19 966.22	.15
C ¹² H ₃ O ¹⁶ H	3- 211	2, 1, ← 3, 0,	Ground					19 967.	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	7, 1, 6← 7, 0, 7	Ground	11/2		11/2		19 969.09	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	7, 1, 6← 7, 0, 7	Ground	17/2		17/2		19 969.09	.15
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	3, 1, 3← 2, 0, 2	Ground	5/2		5/2		19 970.6	.5
C ¹² H ₅ C ¹² N ¹⁵	4-1292	8, 1, 8← 7, 1, 7	Ground					19 970.6	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	7, 1, 6← 7, 0, 7	Ground	17/2		17/2		19 971.96	.15
Si ²⁸ D ₂ F ¹⁹	4-1603	4, 1, 3← 4, 0, 4	Ground					19 972.85	.10
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		19 973.43	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		19 976.16	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 3, 2← 5, 2, 3	Ground					19 977.08	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 4, 1← 4, 3, 2	Ground					19 977.08	.1
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁵	4- 671	8, 1, 7← 8, 0, 8	Ground					19 977.83	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		19 978.51	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		19 978.80	.15
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	1, 0, ← 0, 0,	Excited					19 980.0	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		19 981.44	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	7, 1, 6← 7, 0, 7	Ground	15/2		15/2		19 981.44	.15
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		19 983.22	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	7, 1, 6← 7, 0, 7	Ground	15/2		15/2		19 984.18	.15
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	3, 1, 3← 2, 1, 2	Ground					19 984.59	.05
N ¹⁵ H ₃	4-1772	6, 4← 6, 4	Ground					19 984.75	.06
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	7, 3, 4← 7, 2, 5	Ground					19 987.2	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	7, 3, 4← 7, 2, 5	Ground					19 988.0	.2
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		19 990.44	.05
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	3, 1, 3← 2, 1, 2	Ground					19 993.5	.1
C ¹² H ₃ Si ^b HD ₂	3- 326	1, 0, 1← 0, 0, 0						19 995.56	.1
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	1, 0, ← 0, 0,	Ground					19 995.8	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		19 999.26	.15
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 2← 2, 2	Ground	5/2		5/2		19 999.66	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 2← 2, 2	Ground	7/2		5/2		19 999.66	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					19 999.9	.1
(C ¹² D ₃) ₃ C ¹² Cl ³⁷	3- 977	4, ← 3, 5	Ground					20 001.5	3.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		20 003.13	.15
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	9, 1, 8← 9, 0, 9	Ground					20 003.13	.2
t-DHC ¹² :C ¹² DF ¹⁹	4- 791	4, 1, 3← 4, 1, 4	Ground					20 004.8	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		20 007.96	.15
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² D	3-1078	4, 1, 4← 3, 1, 3	Ground					20 009.0	.1
N ¹⁵ H ₃	4-1772	11, 9←11, 9	Ground					20 010.05	.08
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 1← 2, 1	Ground	7/2		5/2		20 010.84	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 1← 2, 1	Ground	5/2		3/2		20 010.84	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	18, 1,18←17, 2,15	Ground					20 011.22	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 4← 3, 1, 3	Ground	7/2		5/2		20 012.11	.15
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 2← 2, 2	Ground	3/2		3/2		20 013.68	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 2← 2, 2	Ground	5/2		3/2		20 013.68	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 1← 2, 1	Ground	3/2		1/2		20 015.77	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 1← 2, 1	Ground	9/2		7/2		20 015.77	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	18, 1,18←17, 2,15	Ground					20 016.47	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	6, ← 5,	Excited		20 017.1	1.0
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 2← 2, 2	Ground	9/2 7/2	20 019.17	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	3, 2← 2, 2	Ground	7/2 7/2	20 019.17	
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	3, 1, 3← 2, 1, 2	Ground		20 019.5	.1
C ^b H ₃ ^b N ^b C ^b S ^b	3- 426	4, , ← 3, ,			20 020.	
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	3, 0, 3← 2, 0, 2	Ground		20 022.3	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	11,11, 1←11, 9, 2	Ground		20 025.87	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		20 027.1	.1
DC ¹³ N ¹⁴	4- 294	10←10	Excited		20 027.10	.1
Si ²⁸ H ₃ C ¹² H:C ¹³ H ₂	3- 624	2, 1, 1← 1, 1, 0	Ground		20 027.20	.10
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	6, ← 5,	Excited		20 028.9	1.0
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁷⁹	4- 43	3, 1, 3← 2, 1, 2	Ground	9/2 7/2	20 029.4	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		20 031.30	
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	8, 4, 4← 8, 3, 5	Ground		20 032.5	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	2, 0, 2← 1, 0, 1			20 034.48	.2
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported			20 035.0	.1
c-Si ²⁸ H ₃ C ¹² H:C ¹² HD	3- 617	2, 1, 1← 1, 1, 0	Ground		20 036.68	.10
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	2, 0, 2← 1, 0, 1			20 036.82	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported			20 038.2	.3
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	3, 0, 3← 2, 0, 2	Ground		20 039.6	.1
C ^b H ₂ ^b Cl ^b F ^b	4- 333	Not Reported			20 042.38	.1
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁷⁹	4- 43	3, 1, 3← 2, 1, 2	Ground	7/2 5/2	20 047.4	
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	7, 3, 4← 7, 3, 5	Ground		20 047.7	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 3, 5← 7, 4, 4	Ground		20 049.26	.1
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	3, 1, 2← 2, 1, 1	Ground	9/2 7/2	20 049.5	
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	3, 0, 3← 2, 0, 2	Ground		20 050.4	.1
C ¹² H ₃ Si ^b HD ₂	3- 326	1, 0, 1← 0, 0, 0			20 052.10	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		20 052.6	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 3, 5← 7, 4, 4	Ground		20 053.31	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 3, 5← 7, 4, 4	Ground		20 054.58	.1
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	10, 9, 1←10, 8, 2	Ground		20 057.1	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	3, 1, 2← 3, 1, 3	Ground		20 059.7	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported			20 063.	5.
a-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 942	4, 3, 2← 4, 2, 3	Ground		20 065.05	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	11, 4, 7←11, 3, 8	Ground	25/2 25/2	20 067.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	11, 4, 7←11, 3, 8	Ground	19/2 19/2	20 067.30	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		20 067.5	.1
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	3, 1, 2← 2, 1, 1	Ground	7/2 5/2	20 067.6	
Si ²⁸ H ₃ C ¹³ H:C ¹² H ₂	3- 615	2, 0, 2← 1, 0, 1	Ground		20 067.88	.10
a-C ¹² H ₂ D(C ¹² H ₃) ₂ Si ^b D	3- 882	2, 2, 0← 1, 1, 0	Ground		20 068.81	.10
C ₆ ¹² H ₅ F ¹⁹	4-1281	32,10,22←32,10,23	Ground		20 070.3	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	5, 3, 2← 5, 3, 3	Ground		20 073.25	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			20 073.28	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			20 073.78	
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	16, 3,14←17, 2,15	Ground		20 076.0	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		20 076.00	.04
Cl ³⁵ F ¹⁹	4-1371	5, 1, 4← 5, 0, 5	Ground	7/2 7/2	20 078.22	.15
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		20 084.41	
C ¹² ₆ H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² ₃ H	4-1231	5, 3, 2← 5, 2, 3	Ground		20 085.22	.1
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	2, 1, 1← 2, 0, 2	Excited		20 091.49	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		20 093.5	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	5, 3, 2← 5, 3, 3	Ground		20 094.58	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground		20 095.87	.2
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 2, 5← 6, 2, 4	Ground		20 096.3	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			20 098.	5.
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	5, 3, 2← 5, 3, 3	Ground		20 099.10	.2
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	5, 3, 2← 5, 3, 3	Ground		20 099.20	.2
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	7, 0, 7← 6, 0, 6	Ground		20 100.	
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	3, 1, 2← 3, 0, 3	Ground		20 101.45	.05
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	5, 1, 4← 5, 1, 5	Ground	5 5	20 103.88	.1
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	1, 0← 0, 0	Ground		20 105.76	.1
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	5, 1, 4← 5, 1, 5	Ground	6 6	20 105.84	.1
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	5, 1, 4← 5, 1, 5	Ground	4 4	20 105.84	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² D	3-1078	4, 1, 3← 3, 1, 2	Ground		20 112.4	.1
s-C ¹² H ₂ D(C ¹² H ₃) ₂ Si ^b D	3- 881	2, 2, 1← 1, 1, 1	Ground		20 116.38	.10
C ¹² ₃ HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ ₃	4-1203	9, 7, 3← 9, 5, 4	Ground		20 116.7	.1
C ¹² ₃ D:C ¹² DC ¹² D:C ¹² DN ¹⁴ ₃ H	4-1185	8, 8, 1← 8, 7, 2	Ground		20 117.5	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	4, 1, 3← 4, 0, 4			20 123.76	.2
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	9, 1, 8← 8, 2, 7	Ground		20 128.1	.1
H ₂ N ¹⁵ C ¹² HO ¹⁶	3- 156	1, 1, 1← 2, 0, 2	Ground		20 131.44	
N ¹⁵ H ₃	4-1772	4, 1← 4, 1	Ground		20 131.53	.12
(C ¹² H ₃) ₃ C ¹² C ¹³ :C ¹² D	3-1076	4, ← 3,	Ground		20 134.6	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		20 135.7	.1
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	7, 3, 5← 6, 3, 4	Ground		20 136.7	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	7, 3, 4← 6, 3, 3	Ground		20 136.7	.15
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	4, 1, 3← 4, 0, 4			20 136.88	.2
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	7, 4, 4← 6, 4, 3	Ground		20 137.8	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	7, 4, 3← 6, 4, 2	Ground		20 137.8	.15
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		20 138.6	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 4← 3, 1, 3	Ground	11/2 9/2	20 139.43	.15
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	4, 1, 4← 3, 1, 3	Ground		20 140.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			20 142.	5.
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	2, 1, 2← 1, 0, 1	Ground		20 142.4	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		20 142.8	.1
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported			20 143.55	1.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 4← 3, 1, 3	Ground	5/2 3/2	20 143.77	.15
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	8, 4, 4← 8, 3, 5	Ground		20 145.3	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	2, 1, 2← 1, 0, 1	Ground		20 149.3	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 4← 3, 1, 3	Ground	9/2 7/2	20 150.49	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 4← 3, 1, 3	Ground	7/2 5/2	20 154.92	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ O ₂ F ¹⁹	4-1581	6, 4, 3← 6, 4, 2	Ground					20 155.1	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	4, 1, 3← 4, 0, 4	Excited					20 155.80	.10
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	9, 7, 3← 9, 5, 4	Ground					20 160.8	.1
D ₂ C ¹² :C ¹² DCl ³⁵	4- 763	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		20 161.10	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					20 171.07	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	7, 1, 6← 7, 0, 7	Ground	11/2		11/2		20 171.49	.15
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 2← 5, 2, 3	Ground	7/2		7/2		20 171.82	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 2← 5, 2, 3	Ground	13/2		13/2		20 173.96	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	7, 1, 6← 7, 0, 7	Ground	17/2		17/2		20 174.67	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	7, 1, 6← 7, 0, 7	Ground	11/2		11/2		20 174.67	.15
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 0, 2← 1, 0, 1	Ground					20 174.75	.05
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	3, 1, 2← 3, 0, 3	Ground					20 174.97	
2,4,6d ₃ -C ₆ H ₅ F ¹⁹	4-1284	5, 2, 4← 4, 2, 3	Ground					20 175.5	.1
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 0, 2← 1, 0, 1	Ground					20 176.20	.05
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	2, 1, 2← 1, 0, 1	Ground					20 177.44	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	7, 1, 6← 7, 0, 7	Ground	17/2		17/2		20 177.63	.15
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 2← 5, 2, 3	Ground	9/2		9/2		20 179.30	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 179.7	.1
HC ¹² N ¹⁴	4- 291	9← 9	Excited					20 181.40	.05
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 2← 5, 2, 3	Ground	11/2		11/2		20 181.40	
C ¹² D ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 182	3, 1, 3← 2, 1, 2	Ground					20 181.61	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 183.1	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 2← 5, 2, 3	Ground					20 183.80	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		20 186.19	.15
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 0, 2← 1, 0, 1	Ground					20 186.62	.05
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	4, 2, 2← 4, 1, 3	Ground					20 187.1	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					20 188.	5.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	7, 1, 6← 7, 0, 7	Ground	15/2		15/2		20 189.13	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		20 189.13	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	7, 1, 6← 7, 0, 7	Ground	15/2		15/2		20 192.05	.15
Si ³⁰ H ₃ C ¹² H:C ¹² H ₂	3- 614	2, 1, 1← 1, 1, 0	Ground					20 192.25	.10
C ¹² H ₅ C ¹² N ¹⁴	4-1291	7, 1, 6← 6, 1, 5	Ground					20 193.7	
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	5, 3, 2← 5, 2, 3	Ground					20 194.	
C ¹² *HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	2, 1, 1← 1, 1, 0	Ground					20 194.4	
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	11, 4, 7←11, 3, 8	Ground					20 201.05	.2
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	2, 1, 1← 1, 1, 0	Ground					20 205.5	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	1, 0, 1← 0, 0, 0	Ground					20 209.20	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	8, 5, 3← 8, 5, 4	Ground					20 209.32	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	9, 6, 3← 9, 6, 4	Ground					20 211.25	
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	3, 0, 3← 2, 1, 2	Ground					20 214.29	
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	4, , ← 3, ,	Ground					20 216.	
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 1, 1← 1, 0, 1	Excited					20 218.15	.10
C ¹² H ₅ F ¹⁹	4-1281	54,17,37←54,17,38	Ground					20 219.	5.
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 4← 4, 4	Ground	7/2		5/2		20 219.7	.5
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	1, 0, 1← 0, 0, 0	Excited					20 219.92	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz ₁	Acc. ±MHz
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 223.	5.
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		20 223.65	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		20 224.65	.05
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 1, 2← 1, 1, 1	Excited					20 224.70	.10
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 0, 2← 1, 0, 1	Excited					20 226.11	.10
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 1, 1← 1, 1, 0	Excited					20 227.69	.10
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	9, 1, 8← 9, 0, 9	Ground					20 228.29	.2
C ^b H ₃ N ^b C ^b S ^b	3- 426	4, , ← 3,						20 230.	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	1, 0, 1← 0, 0, 0	Excited					20 231.59	
S ³⁴ O ₂ F ₂ ¹⁹	4-1632	2, 1, 2← 1, 1, 1	Ground					20 232.31	.10
c-DHC ¹² :C ¹² DCI ³⁵	4- 762	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		20 232.40	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 2, 8← 9, 1, 8	Ground					20 234.15	.1
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		20 235.21	.05
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	2, 1, 2← 1, 1, 1	Ground					20 236.06	.10
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 2, 0← 1, 1, 0	Excited					20 236.36	.10
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 0, 2← 1, 0, 1	Ground					20 236.43	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		20 237.46	.05
C ¹² H ₂ F ₂ ¹⁹	4- 351	8, 3, 5← 9, 2, 8	Ground					20 237.69	.10
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		20 238.71	.05
C ¹² *H ₂ C ¹⁴ H:C ¹² HC ¹² H:C ¹² *H	4-1231	3, 1, 2← 3, 0, 3	Ground					20 239.74	.1
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	4, , ← 3, ,	Excited					20 241.	
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		20 241.57	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					20 241.9	.1
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	2, 1, 2← 1, 1, 1	Ground					20 243.40	.10
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	3, 1, 2← 3, 0, 3	Excited					20 243.53	.05
C ¹² H ₃ N ¹⁴ H	3- 261	Not Reported	Ground					20 243.54	.04
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 1, 2← 1, 1, 1	Ground					20 244.21	.10
S ³⁴ O ₂ F ₂ ¹⁹	4-1632	2, 0, 2← 1, 0, 1	Ground					20 245.	
H ₂ N ¹⁵ C ¹² DO ¹⁶	3- 157	1, 0, 1← 0, 0, 0	Ground					20 245.78	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	3, 0, 3← 2, 0, 2	Ground					20 246.27	.05
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	4, 2, 2← 4, 1, 3	Ground					20 246.5	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		20 246.72	.05
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		20 247.70	.05
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² D	3-1072	4, ← 3,	Ground					20 248.8	.1
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 3← 4, 3	Ground	7/2		5/2		20 249.8	.5
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 2, 1← 1, 1, 1	Excited					20 251.58	.10
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 4← 4, 4	Ground	13/2		11/2		20 253.5	.5
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	3, 2, 2← 2, 2, 1	Ground					20 253.82	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 254.	5.
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		20 256.75	.05
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 0, 2← 1, 0, 1	Ground					20 257.49	.10
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 0, 2← 1, 0, 1	Excited					20 259.98	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					20 260.	5.
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						20 260.	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	3, 2, 1← 2, 2, 0	Ground					20 261.17	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						20 263.58	.1
S ³⁴ O ₂ F ₂ ¹⁹	4-1632	2, 1, 1← 1, 1, 0	Ground					20 264.11	.10
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 3← 4, 3	Ground	13/2		11/2		20 265.9	.5
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	1, 0, 1← 0, 0, 0	Excited					20 266.86	
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	8, 3, 5← 8, 2, 6	Ground					20 267.8	.2
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 2← 4, 2	Ground	7/2		5/2		20 271.3	.5
3C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	8, 1, 8← 7, 1, 7	Ground					20 271.9	.2
N ¹⁵ H ₃	4-1772	5, 3← 5, 3	Ground					20 272.04	.02
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 2← 4, 2	Ground	13/2		11/2		20 274.4	.5
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 275.9	.1
S ³² O ₂ F ₂ ¹⁹	4-1631	2, 1, 1← 1, 1, 0	Ground					20 276.20	.10
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	2, 1, 2← 1, 1, 1	Ground					20 276.44	.10
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	3, 2, 2← 3, 1, 3	Ground					20 276.76	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	25,18, 7←25,18, 8	Ground					20 278.56	.1
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	12, 9, 3←12, 8, 4	Ground					20 279.1	
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 1← 4, 1	Ground	13/2		11/2		20 279.5	.5
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	3, 1, 2← 3, 0, 3	Ground					20 279.79	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	25,18, 7←25,18, 8	Ground					20 280.18	.1
C ₆ H ₅ F ¹⁹	4-1281	20, 6,14←20, 6,15	Ground					20 280.9	
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 0← 4, 0	Ground	13/2		11/2		20 281.2	.5
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 0← 4, 0	Ground	11/2		9/2		20 281.2	.5
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	2, 1, 2← 1, 1, 1	Ground					20 284.02	.10
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 1← 4, 1	Ground	11/2		9/2		20 284.7	.5
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	10, 4, 6←11, 3, 9	Ground					20 285.	
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						20 285.53	1.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 287.	5.
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 0← 4, 0	Ground	7/2		5/2		20 288.9	.5
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 0← 4, 0	Ground	9/2		7/2		20 288.9	.5
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 1← 4, 1	Ground	9/2		7/2		20 289.6	.5
H ₂ B ¹⁰ H ₂ B ¹¹ HB ⁸¹	4- 44	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		20 290.3	
H ₂ B ¹⁰ H ₂ B ¹¹ HB ⁸¹	4- 44	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		20 290.3	
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	12,12, 1←12,11, 2	Ground					20 291.3	.1
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 2← 4, 2	Ground	9/2		7/2		20 293.2	.5
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	10, 5, 6←10, 5, 5	Ground					20 293.9	.1
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 2← 4, 2	Ground	11/2		9/2		20 295.6	.5
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	4, 3, 2← 4, 2, 3	Ground					20 296.7	.1
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					20 296.75	
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 3← 4, 3	Ground	9/2		7/2		20 297.8	.5
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	11, 2, 9←11, 2,10						20 297.88	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	2, 2, 1← 2, 1, 2	Ground					20 298.0	.2
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	1, 1, 0← 1, 0, 1	Ground					20 298.50	.05
4d-C ₆ H ₅ C ¹² N ¹⁴	4-1296	8, 0, 8← 7, 0, 7	Ground					20 298.7	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					20 302.80	
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 4← 4, 4	Ground	9/2		7/2		20 304.6	.5
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	2, 2, 1← 2, 1, 2	Ground					20 305.0	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	6, 6, 1← 6, 5, 2	Ground					20 310.1	
s-Si ²⁸ H ₂ DC ¹² H:C ¹² H ₂	3- 619	2, 1, 1← 1, 1, 0	Ground					20 310.72	.10
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 0, 2← 1, 0, 1	Ground		5/2		3/2	20 313.27	.05
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 3← 4, 3	Ground		11/2		9/2	20 313.8	.5
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 0, 2← 1, 0, 1	Ground		7/2		5/2	20 315.02	.05
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	3, 2, 2← 3, 0, 3	Ground					20 317.9	.1
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	2, 1, 2← 1, 1, 1	Ground					20 319.39	.10
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						20 320.	
DC ¹² :C ¹² Cl ³⁷	4- 604	2← 1	Ground		3/2		1/2	20 321.12	.1
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	4, 1, 3← 4, 1, 4	Ground					20 321.3	.05
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 0, 2← 1, 0, 1	Ground		3/2		3/2	20 322.10	.05
DC ¹² :C ¹² Cl ³⁷	4- 604	2← 1	Ground		5/2		5/2	20 322.50	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					20 325.82	.1
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	2, 1, 2← 1, 1, 1	Ground					20 326.70	.10
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	2, 1, 2← 1, 0, 1	Ground		3/2		1/2	20 327.30	.2
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	3, 0, 3← 2, 1, 2	Ground					20 327.53	.2
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	6, 4, 2← 6, 4, 3	Ground					20 328.7	.1
C ¹³ H ₃ O ¹⁶ H	3- 213	30, 2, ←30, 1,	Ground					20 329.32	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 2, 4← 6, 1, 5	Ground		5		6	20 332.08	.10
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	2, 1, 2← 1, 0, 1	Ground		1/2		1/2	20 332.60	.2
a-C ¹² H ₂ D(C ¹² H ₃) ₂ Si ^b D	3- 882	2, 2, 1← 1, 1, 1	Ground					20 333.25	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 2, 4← 6, 1, 5	Ground		4		5	20 333.55	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 2, 4← 6, 1, 5	Ground		6		7	20 333.55	.10
s-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 943	3, 2, 2← 3, 1, 3	Ground					20 334.26	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	2, 1, 2← 1, 0, 1	Ground		5/2		5/2	20 334.80	.2
S ³² O ₂ ¹⁶	4-1831	12, 3, 9←13, 2,12	Ground					20 335.47	.1
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	5, 4, 2← 5, 3, 3	Ground					20 336.7	.1
DC ¹² :C ¹² Cl ³⁷	4- 604	2← 1	Ground		1/2		1/2	20 336.84	.1
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	11,11, 1←11, 9, 2	Ground					20 337.14	.10
DC ¹² :C ¹² Cl ³⁷	4- 604	2← 1	Ground		7/2		5/2	20 338.29	.1
DC ¹² :C ¹² Cl ³⁷	4- 604	2← 1	Ground		5/2		3/2	20 338.29	.1
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	5, 4← 4, 4	Ground		11/2		9/2	20 339.4	.5
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	2, 1, 2← 1, 0, 1	Ground		7/2		5/2	20 340.25	.2
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	3, 2, 2← 3, 1, 3	Ground					20 340.93	
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	1, 0, 1← 0, 0, 0	Excited					20 341.2	
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	1, 0, 1← 0, 0, 0	Ground					20 344.25	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						20 345.0	.3
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					20 346.83	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	2, 1, 2← 1, 0, 1	Ground		5/2		3/2	20 349.25	.2
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Ground		3/2		3/2	20 349.3	
DC ¹² :C ¹² Cl ³⁷	4- 604	2← 1	Ground		3/2		3/2	20 349.48	.1
C ¹² D ₂ HC ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 897	8, , ← 7, ,	Ground					20 349.5	.5
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	4, , ← 3, ,	Excited					20 350.	
C ₆ H ₅ O ¹⁶ H	3-1051	5, 1, 5← 4, 0, 4	Ground					20 353.2	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	2, 1, 2← 1, 0, 1	Ground		3/2		3/2	20 353.25	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² HDF ¹⁹	3- 552	6, 1, 6← 5, 2, 3	Ground					20 353.4	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 4← 4, 4	Ground					20 354.18	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 3← 4, 3	Ground					20 355.55	.1
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	9, 5, 4← 9, 5, 5	Ground					20 356.01	.2
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	3, 1, 2← 3, 1, 3	Ground					20 356.22	.2
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 2← 4, 2	Ground					20 356.56	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 0← 4, 0	Ground					20 357.38	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 1← 4, 1	Ground					20 357.38	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	7, 5, 2← 7, 4, 3	Ground					20 357.84	
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	9, 5, 4← 9, 5, 5	Ground					20 359.26	.2
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	3, 1, 2← 3, 1, 3	Ground					20 359.45	.2
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 4← 4, 4	Ground	7/2		5/2		20 365.3	.5
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					20 368.40	
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	10, 6, 5←10, 6, 4	Ground					20 369.85	
Si ²⁸ H ₃ C ¹² D:C ¹² H ₂	3- 616	2, 1, 1← 1, 1, 0	Ground					20 370.22	.10
N ¹⁴ H ₃	4-1771	5, 2← 5, 2	Ground					20 371.46	.02
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		20 371.50	.05
C ¹² ₃ HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	10, 8, 3←10, 6, 4	Ground					20 372.0	.1
C ¹² ₃ D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	7, 6, 2← 7, 5, 3	Ground					20 372.6	
C ¹² ₃ HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	2, 1, 1← 1, 1, 0	Ground					20 374.2	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		20 374.88	.05
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					20 375.00	
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -E	3- 192	10, 6, 5←10, 6, 4	Ground					20 377.40	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		20 377.89	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 2← 1, 1, 1	Ground					20 380.58	.05
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		20 381.3	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					20 383.2	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		20 383.79	.05
3d-C ₆ H ₅ C ¹² N ¹⁴	4-1295	8, 0, 8← 7, 0, 7	Ground					20 383.8	.2
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					20 385.	
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						20 387.36	.05
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		20 388.7	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	2, 1, 2← 1, 0, 1	Ground					20 388.94	.2
2C ¹³ .C ₆ H ₅ C ¹² N ¹⁴	4-1298	8, 1, 8← 7, 1, 7	Ground					20 389.0	.2
C ¹² ₃ H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	5, 5, 1← 5, 3, 2	Ground					20 390.3	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 1← 4, 1	Excited [†]					20 390.87	.1
C ¹² D ₃ C ¹³ O ¹⁶ F ¹⁹	3- 401	9, 5, 4← 9, 5, 5	Ground					20 391.43	.2
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	6, 2, 4← 6, 1, 5	Ground					20 391.51	
C ¹² D ₃ C ¹³ O ¹⁶ F ¹⁹	3- 401	9, 5, 4← 9, 5, 5	Ground					20 391.54	.2
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		20 392.86	.05
DN ¹⁴ C ¹² O ¹⁶	4- 303	1, , ← 0, ,	Ground					20 394.7	
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	5, 1, 4← 5, 0, 5	Ground					20 394.99	
DN ¹⁴ O ₃ ¹⁶	3- 32	6, 4, 2← 6, 4, 3	Ground					20 396.03	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 396.8	.1
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁷⁹	4- 43	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		20 396.9	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁷⁹	4- 43	3, 0, 3← 2, 0, 2	Ground	7/2	5/2			20 396.9	
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	8, 1, 7← 8, 0, 8	Ground					20 397.79	.2
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 2← 4, 2	Excited					20 399.69	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :G ¹² H	4-1191	5, 4← 4, 4	Excited					20 399.69	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			20 400.5	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 3← 4, 3	Excited					20 400.64	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 1← 4, 1	Excited					20 400.64	.1
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 3← 4, 3	Ground	7/2	5/2			20 400.9	.5
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 2← 4, 2	Excited					20 401.24	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 0← 4, 0	Excited					20 401.24	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Ground	3/2	1/2			20 401.7	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					20 405.	5.
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Excited	7/2	5/2			20 405.6	
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	6, 5, 2← 6, 4, 3	Ground					20 406.4	.1
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 4← 4, 4	Ground	13/2	11/2			20 406.5	.5
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	9, 1, 8← 9, 1, 9	Ground					20 408.43	.05
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	9, 1, 8← 9, 1, 9	Ground					20 409.38	.05
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	11,10, 1←11,10, 2	Ground					20 410.	10.
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Ground					20 411.14	.05
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					20 411.65	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	5, 1← 4, 1	Excited					20 411.95	.1
Si ²⁹ H ₃ C ¹² H:C ¹² H ₂	3- 613	2, 1, 1← 1, 1, 0	Ground					20 412.81	.10
C ^b H ₃ N ^b C ^b S ^b	3- 426	4, , ← 3, ,						20 413.	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						20 414.9	
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	3, 1, 3← 2, 1, 2	Ground					20 415.8	.1
(C ¹² D ₃) ₃ C ¹² Cl ³⁵	3- 976	4, ← 3,	Ground					20 417.9	3.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 420.	5.
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 3← 4, 3	Ground	13/2	11/2			20 421.0	.5
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	8, 6, 2← 8, 6, 3	Ground					20 423.6	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			20 424.6	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			20 426.4	
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 2← 4, 2	Ground	7/2	5/2			20 427.3	.5
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	4, 3, 2← 4, 2, 3	Ground					20 429.62	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	8, 5, 3← 8, 5, 4	Ground					20 430.0	
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 2← 4, 2	Ground	13/2	11/2			20 431.7	.5
H ₂ N ¹⁴ C ¹² DO ¹⁶	3- 155	3, 0, 3← 2, 1, 2	Ground					20 435.77	
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	2, 1, 2← 1, 1, 1	Ground					20 435.80	.2
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 1← 4, 1	Ground	13/2	11/2			20 437.6	.5
C ¹² H ₂ DSi ^b H ₃	3- 327	1, 0, 1← 0, 0, 0						20 437.6	
1C ¹³ .C ₈ ¹² H ₅ C ¹² N ¹⁴	4-1297	8, 1, 8← 7, 1, 7	Ground					20 439.0	.1
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	10, 8, 3←10, 6, 4	Ground					20 439.5	.1
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 0← 4, 0	Ground	11/2	9/2			20 439.6	.5
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 0← 4, 0	Ground	13/2	11/2			20 439.6	.5
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, ← 4,	Ground					20 441.9	.3
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	4, , ← 3, ,						20 443.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₂	F ₁	F		
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 1← 4, 1	Ground	7/2		5/2		20 443.3	.5
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 1← 4, 1	Ground	11/2		9/2		20 443.7	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 447.	5.
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 1← 4, 1	Ground	9/2		7/2		20 448.1	.5
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 0← 4, 0	Ground	7/2		5/2		20 448.1	.5
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	9, 4, 5← 9, 4, 6	Ground					20 448.7	.05
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	8, 1, 7← 8, 1, 8	Ground					20 448.71	
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 0← 4, 0	Ground	9/2		7/2		20 449.6	.5
C ₆ H ₅ C ¹² N ¹⁴	4-1291	8, 1, 8← 7, 1, 7	Ground					20 453.0	.2
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 2← 4, 2	Ground	9/2		7/2		20 453.3	.5
DC ¹² N ¹⁴	4- 292	10←10	Excited					20 454.40	.05
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Ground	3/2		3/2		20 456.8	
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 2← 4, 2	Ground	11/2		9/2		20 456.8	.5
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 3← 4, 3	Ground	9/2		7/2		20 459.7	.5
S ³² O ₂ ¹⁶	4-1831	Not Reported						20 460.05	.1
HDO ¹⁶	4-1712	3, 2, 1← 4, 1, 4	Ground					20 460.40	
C ¹² *HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	10, 8, 3←10, 6, 4	Ground					20 460.5	
C ₆ H ₅ O ¹⁶ H	3-1051	5, 1, 5← 4, 0, 4	Ground					20 465.3	
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 4← 4, 4	Ground	9/2		7/2		20 468.0	.5
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						20 469.5	1.
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					20 469.8	.5
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	4, 3, 2← 4, 1, 3	Ground					20 470.9	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		20 478.9	
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 3← 4, 3	Ground	11/2		9/2		20 479.0	.5
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	10, 8, 3←10, 6, 4	Ground					20 479.9	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	7, 3, 5← 6, 5, 2	Ground					20 481.5	
C ¹² *HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	3, 1, 3← 2, 1, 2	Ground					20 482.3	
C ₆ H ₅ Cl ³⁵	4-1271	7, 2, 5← 6, 2, 4	Ground					20 482.4	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	7, 1, 6← 6, 1, 5	Ground					20 491.7	.15
C ¹² *HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	3, 0, 3← 2, 0, 2	Ground					20 492.4	
C ¹² H ₂ DS; ^b H ₃	3- 327	1, 0, 1← 0, 0, 0						20 494.80	
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	3, 1, 3← 2, 1, 2	Ground					20 499.0	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		20 499.1	
C ¹² H ₂ F ₂ ¹⁹	4- 351	39,11,29←40,10,30	Ground					20 499.85	.10
C ¹² H ₂ F ₂ ¹⁹	4- 351	39,11,28←40,10,31	Ground					20 500.38	.10
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 1, 2← 1, 0, 1	Ground					20 502.24	.04
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 1, 2← 1, 0, 1	Ground					20 503.80	.04
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		20 504.4	
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 1, 2← 1, 0, 1	Ground					20 505.26	.04
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					20 505.83	10.
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 1, 1← 1, 1, 0	Ground					20 508.5	.05
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	5, 4← 4, 4	Ground	11/2		9/2		20 509.3	.5
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	3, 0, 3← 2, 0, 2	Ground					20 509.3	
(C ¹² H ₃) ₃ C ¹² H ₂ O ¹⁶	3-1011	Not Reported						20 510.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 512.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
(C ¹³ H ₃) ₂ C ¹² H ₃ Si ^b H	3- 878	2, 1, 1← 1, 0, 1	Ground					20 512.02	.1
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	10, 3, 7←11, 1,10	Ground					20 513.18	.01
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	10, 5, 6←10, 5, 5	Ground					20 514.0	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	12,12, 1←12,10, 2	Ground					20 514.14	.10
C ₆ H ₅ F ¹⁹	4-1281	29, 9,20←29, 9,21	Ground					20 514.5	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		20 518.4	
C ¹² *HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	11, 9, 3←11, 7, 4	Ground					20 518.9	
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	4, 2, 2← 4, 2, 3	Ground					20 519.1	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		20 519.9	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	3, 1, 2← 2, 1, 1	Ground					20 521.10	.05
t-HDC ¹² :C ¹² DCI ³⁷	4- 764	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		20 523.55	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 524.9	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Excited	7/2		5/2		20 528.1	
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	5, 3, 2← 5, 3, 3	Ground					20 529.2	.3
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Excited	5/2		3/2		20 530.2	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Ground					20 531.11	.04
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 532.9	.1
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					20 535.86	10.
Si ²⁸ H ₃ C ¹³ H:C ¹² H ₂	3- 615	2, 1, 1← 1, 1, 0	Ground					20 536.54	.10
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					20 536.65	10.
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	5, 3, 2← 6, 2, 5	Ground					20 540.9	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	9; 2, 7← 9, 1, 8	Ground					20 541.46	
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	6, 6, 1← 6, 5, 2	Ground					20 541.8	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	9, 2, 7← 9, 1, 8	Ground					20 543.00	
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	11, 9, 3←11, 7, 4	Ground					20 543.3	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	1, 1, 1← 2, 0, 2						20 543.96	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					20 545.78	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	13, 3, ←12, 4,	Ground					20 547.17	.04
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	1, 1, 1← 0, 0, 0	Ground					20 547.20	.05
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		20 547.4	
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	1, 1, 1← 0, 0, 0	Ground					20 547.90	.05
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		20 549.4	
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	1, 1, 1← 0, 0, 0	Ground					20 553.47	.05
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, . ← 2, ,	Ground					20 554.	5.
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, . ← 2, ,	Ground					20 554.03	10.
C ₆ H ₅ Cl ³⁵	4-1271	7, 1, 6← 6, 1, 5	Ground					20 554.7	
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					20 556.	5.
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	10, 4, 6←10, 3, 7	Ground					20 556.93	.2
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		20 560.17	.05
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					20 560.75	
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		20 563.36	.05
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	1, 0, 1← 0, 0, 0		2		1		20 566.08	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	1, 0, 1← 0, 0, 0		1		1		20 566.97	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						20 570.	
C ¹² H ₂ F ₂ ¹⁹	4- 351	42,10,33←41,11,30	Ground					20 570.63	.10
C ¹² H ₂ F ₂ ¹⁹	4- 351	42,10,32←41,11,31	Ground					20 571.99	.10
2d-C ₆ H ₅ C ¹² N ¹⁴	4-1294	8, 0, 8← 7, 0, 7	Ground					20 582.0	.2
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	20 582.64	.05
4C ¹³ -C ₆ H ₅ C ¹² N ¹⁴	4-1301	8, 0, 8← 7, 0, 7	Ground					20 585.1	.2
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	20 586.21	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 4, 3← 7, 3, 4	Ground					20 590.99	.05
(C ¹² H ₃) ₃ Si ³⁰ D	3- 876	2, ← 1,	Ground					20 592.50	.20
(C ¹² H ₃) ₂ S ³²	3- 601	6, 4, 3← 7, 3, 4	Ground					20 592.70	.05
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	8, 1, 7← 8, 0, 8	Ground					20 593.01	.2
(C ¹² H ₃) ₂ S ³²	3- 601	6, 4, 3← 7, 3, 4	Ground					20 593.52	.05
C ¹² ₂ HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	4, 1, 3← 3, 3, 0	Ground					20 594.0	
(C ¹² H ₃) ₂ S ³²	3- 601	6, 4, 3← 7, 3, 4	Ground					20 595.36	.05
S ³³ O ₂ ¹⁶	4-1832	5, 2, 4← 6, 1, 5	Ground		7/2		9/2	20 602.07	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 602.8	.1
S ³³ O ₂ ¹⁶	4-1832	5, 2, 4← 6, 1, 5	Ground		13/2		15/2	20 603.55	
S ³³ O ₂ ¹⁶	4-1832	5, 2, 4← 6, 1, 5	Ground		9/2		11/2	20 608.13	
N ¹⁴ D ₂ H	4-1774	8, 3, 6← 8, 2, 6	Ground					20 608.77	.05
C ¹² ₂ D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	3, 2, 2← 3, 1, 3	Excited					20 610.72	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 3← 2, 1, 2	Ground		7/2		7/2	20 611.4	
(C ¹² H ₃) ₃ Si ²⁹ D	3- 874	2, ← 1,	Ground					20 615.49	.20
a-C ¹² H ₂ DC ¹² H ₂ C ¹² H ₃	3- 786	2, 1, 1← 2, 0, 2	Ground					20 616.12	.06
4d-C ₆ H ₅ F ¹⁹	4-1283	5, 2, 4← 4, 2, 3	Ground					20 616.2	.1
C ¹² D ₃ S ³² H	3- 224	1, 0, 1← 0, 0, 0	Ground					20 619.0	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	5, 0, 5← 4, 1, 4	Ground					20 619.17	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	5, 0, 5← 4, 1, 4	Ground					20 620.26	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	5, 0, 5← 4, 1, 4	Ground					20 621.30	.1
C ^b HF ₃ ^b	4- 285	1, ← 0,						20 621.38	.10
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 1, 1← 1, 1, 0	Ground					20 621.8	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	9, 2, 7← 9, 1, 8	Ground					20 621.91	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	9, 2, 7← 9, 1, 8	Ground					20 623.67	
C ¹² ₂ H:C ¹² HO ¹⁶ C ¹² H:C ¹² ₂ H	4-1151	9, 9, 1← 9, 7, 2	Ground					20 624.34	
C ¹² D ₃ S ³² H	3- 224	1, 0, 1← 0, 0, 0	Ground					20 627.6	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						20 636.57	
C ¹² ₂ HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	12,10, 3←12, 8, 4	Ground					20 636.8	
C ¹² H ₅ C ¹³ N ¹⁴	4-1293	8, 0, 8← 7, 0, 7	Ground					20 637.2	.2
3C ¹³ -C ₆ H ₅ C ¹² N ¹⁴	4-1299	8, 0, 8← 7, 0, 7	Ground					20 637.5	.1
C ¹² ₂ H:C ¹² HO ¹⁶ C ¹² H:C ¹² ₂ H	4-1151	11, 9, 2←11, 9, 3	Ground					20 637.71	
(C ¹² H ₃) ₃ Si ²⁸ D	3- 872	2, ← 1,	Ground					20 638.87	.10
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						20 642.17	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					20 642.5	.5
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	6, 0, 6← 5, 1, 5	Ground		9/2		7/2	20 643.52	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Cl ³⁷ O ₂ ¹⁶	4-1382	14, 2,13←13, 3,10	Ground	31/2	29/2			20 643.6	
C ¹³ HF ₃ ¹⁹	4-282	1, ← 0,	Ground					20 643.93	.10
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3-233	6, 0, 6← 5, 1, 5	Ground	15/2	13/2			20 644.81	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3-761	21,10, ←20,11,	Ground					20 644.92	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3-761	21,10, ←20,11,	Ground					20 645.46	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3-761	21,10, ←20,11,	Ground					20 645.91	.1
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3-646	5, 1, 4← 5, 0, 5	Ground					20 646.21	.20
C ¹² H ₃ S ³² H	3-221	Not Reported	Ground					20 646.4	.1
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3-611	2, 1, 1← 1, 1, 0	Ground					20 646.43	.05
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3-233	6, 0, 6← 5, 1, 5	Ground	11/2	9/2			20 646.97	.05
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3-646	5, 1, 4← 5, 0, 5	Ground					20 647.95	.20
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3-233	6, 0, 6← 5, 1, 5	Ground	13/2	11/2			20 648.29	.05
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	6, 3, 3← 6, 3, 4	Ground					20 648.5	
HC ¹³ HO ¹⁶	4-382	17, 3,14←17, 3,15	Ground					20 649.30	
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3-646	5, 1, 4← 5, 0, 5	Ground					20 649.83	.20
C ¹² HF ₃ ¹⁹	4-281	1, ← 0,	Excited					20 650.59	.10
C ¹² H ₃ C ¹² HO ¹⁶	3-471	Not Reported						20 650.80	
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	7, 3, 5← 7, 3, 4	Ground					20 651.9	.1
C ¹² HF ₃ ¹⁹	4-281	1, ← 0,	Excited					20 658.67	.10
Cl ³⁷ O ₂ ¹⁶	4-1382	14, 2,13←13, 3,10	Ground	29/2	27/2			20 661.4	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3-461	12, 9, 3←12, 9, 4	Ground					20 662.0	
C ₆ H ₅ F ¹⁹	4-1281	23, 7,16←23, 7,17	Ground					20 662.1	
Na ²³ I ¹²⁷	1-	3← 2	Excited	7/2	5/2			20 663.68	.2
H ₂ N ¹⁵ C ¹² HO ¹⁶	3-156	1, 0, 1← 0, 0, 0	Ground					20 664.33	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	8, 6, 3← 8, 4, 4	Ground					20 666.8	
C ¹² HF ₃ ¹⁹	4-281	1, ← 0,	Excited					20 667.26	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4-901	5, 1, 4← 5, 0, 5	Ground					20 667.93	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3-544	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			20 668.28	.05
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	12,10, 3←12, 8, 4	Ground					20 669.9	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3-544	2, 1, 1← 1, 1, 0	Ground	3/2	-3/2			20 670.34	.05
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3-612	2, 1, 1← 2, 0, 2	Ground					20 672.34	.05
C ¹² H ₃ C ¹² HO ¹⁸	3-479	6, 1, 5← 6, 1, 6	Ground					20 674.05	.2
Na ²³ I ¹²⁷	1-	3← 2	Excited	11/2	9/2			20 674.43	.2
C ¹² D ₃ S ³² H	3-224	1, 0, 1← 0, 0, 0	Ground					20 674.8	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3-411	2, ← 1,	Excited					20 675.2	
Na ²³ I ¹²⁷	1-	3← 2	Excited	9/2	7/2			20 676.96	.2
Na ²³ I ¹²⁷	1-	3← 2	Excited	7/2	7/2			20 676.96	.2
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3-544	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			20 677.17	.05
C ¹² HF ₃ ¹⁹	4-281	1, ← 0,	Excited					20 677.36	.10
C ¹² H ₃ C ¹² F ₃ ¹⁹	3-411	2, ← 1,	Excited					20 678.2	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	9, 7, 3← 9, 5, 4	Ground					20 678.5	
C ¹² D ₃ S ³² H	3-224	1, 0, 1← 0, 0, 0	Ground					20 678.9	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3-544	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			20 680.09	.05
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3-524	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			20 680.26	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
O ^b O ^b O ^b	4-1847	Not Reported						20 680.7	
Cl ³⁷ O ₂ ⁶	4-1382	14, 2,13←13, 3,10	Ground	27/2		25/2		20 682.2	
N ¹⁵ H ₃	4-1772	4, 2← 4, 2	Ground					20 682.87	.02
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		20 684.07	.05
g-C ¹² H ₂ DC ¹² H ₂ C ³⁵	3- 544	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		20 686.34	.05
Cl ³⁵ O ₂ ⁶	4-1381	7, 1, 6← 6, 2, 5	Ground					20 688.0	.2
g-C ¹² H ₂ DC ¹² H ₂ C ³⁵	3- 544	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		20 689.31	.05
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		20 689.88	.05
(C ¹³ H ₃) ₂ C ¹² H ₃ Si ^b H	3- 878	2, 2, 0← 1, 1, 0	Ground					20 690.03	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 691.	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	5, 2, 3← 5, 2, 4	Ground					20 691.0	
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		20 693.57	.05
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	2, ← 1,	Excited					20 694.8	
(C ¹² D ₃) ₂ O ¹⁶	3- 592	3, 1, 2← 3, 0, 3	Ground					20 695.5	.5
C ¹² HF ₃ ¹⁹	4- 281	1, ← 0,	Ground					20 697.73	.10
S ³⁴ O ₂ ¹⁶	4-1833	8, 2, 6← 9, 1, 9	Ground					20 699.30	.02
C ¹² *H ₂ C ¹² D:C ¹² *H	4-1032	8, 5, 3← 8, 5, 4	Ground					20 700.9	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						20 701.5	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	11, 8, 3←11, 7, 4	Ground					20 703.6	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						20 703.8	.5
Cl ³⁷ O ₂ ¹⁶	4-1382	14, 2,13←13, 3,10	Ground	25/2		23/2		20 705.5	
C ¹² HF ₃ ¹⁹	4- 281	1, ← 0,	Excited					20 705.82	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 706.8	.1
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		20 707.16	.05
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	Not Reported						20 707.4	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	2, ← 1,	Excited					20 708.18	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	3, 1, 3← 2, 1, 2	Ground					20 709.0	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	2, ← 1,	Excited					20 709.7	
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		20 711.40	.05
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		20 711.43	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	7, 1, 6← 6, 2, 5	Ground					20 713.3	.2
C ¹² HF ₃ ¹⁹	4- 281	1, ← 0,	Excited					20 713.54	.10
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		20 715.41	.05
HC ¹³ ; C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 716.	5.
N ¹⁴ H ₃	4-1771	8, 6← 8, 6	Ground					20 719.21	.02
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						20 720.	
C ¹² HF ₃ ¹⁹	4- 281	1, ← 0,	Excited					20 720.99	.10
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	3, 0, 3← 2, 0, 2	Ground					20 722.5	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	2, ← 1,	Excited		20 725.0	
C ₆ ¹² H ₅ F ¹⁹	4-1281	26, 8,18←26, 8,19	Ground		20 725.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4 901	Not Reported	Ground		20 726.	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported			20 728.	3.
DC ¹² :C ¹² Cl ³⁵	4- 603	2← 1	Ground	3/2 1/2	20 728.03	.1
C ¹² *H ₂ C ¹³ H ₂ C ¹² *Cl ₂ ³⁵	4-1068	5, 5, 1← 4, 0, 4	Ground		20 728.54	
DC ¹² :C ¹² Cl ³⁵	4- 603	2← 1	Ground	5/2 5/2	20 729.79	.1
C ¹² D ₃ S ³² H	3- 224	1, 0, 1← 0, 0, 0	Ground		20 732.0	
C ¹² D ₃ S ³² H	3- 224	1, 0, 1← 0, 0, 0	Ground		20 732.8	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	4, 2, 2← 4, 2, 3	Ground		20 735.	
N ¹⁴ H ₃	4-1771	9, 7← 9, 7	Ground		20 735.44	.02
HC ¹³ HO ¹⁶	4- 382	9, 2, 7← 9, 2, 8	Ground		20 736.30	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4 901	Not Reported	Ground		20 738.	.1
Na ²³ I ¹²⁷	1-	3← 2	Excited	9/2 9/2	20 738.98	.20
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported			20 740.	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	2, ← 1,	Ground		20 740.53	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	7, 1, 6← 6, 2, 5	Ground		20 741.8	.2
DC ¹² :C ¹² Cl ³⁵	4- 603	2← 1	Ground	3/2 5/2	20 744.00	.1
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 6, 8←14, 5, 9	Ground	31/2 31/2	20 744.17	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 6, 9←14, 5,10	Ground	31/2 31/2	20 744.17	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 6, 9←14, 5,10	Ground	25/2 25/2	20 744.17	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 6, 8←14, 5, 9	Ground	25/2 25/2	20 744.17	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 3← 4, 3	Ground	7/2 5/2	20 744.2	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 6, 8←14, 5, 9	Ground	29/2 29/2	20 746.36	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 6, 8←14, 5, 9	Ground	27/2 27/2	20 746.36	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 6, 9←14, 5,10	Ground	27/2 27/2	20 746.36	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14, 6, 9←14, 5,10	Ground	29/2 29/2	20 746.36	
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	6, 1, 5← 6, 1, 6	Ground		20 746.48	.2
DC ¹² :C ¹² Cl ³⁵	4- 603	2← 1	Ground	1/2 1/2	20 748.02	.1
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 4← 4, 4	Ground	13/2 11/2	20 749.6	
DC ¹² :C ¹² Cl ³⁵	4- 603	2← 1	Ground	7/2 5/2	20 749.76	.1
DC ¹² :C ¹² Cl ³⁵	4- 603	2← 1	Ground	5/2 3/2	20 749.76	.1
2C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1298	8, 0, 8← 7, 0, 7	Ground		20 750.9	.2
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	4, 0, 4← 3, 1, 3	Ground		20 751.45	
s-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 943	2, 0, 2← 1, 1, 1	Ground		20 752.87	.05
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	10, 1, 9←10, 1,10	Ground		20 753.90	
P ³¹ H ₂ D	4-1782	Not Reported	Ground		20 754.57	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 6, 8←13, 5, 9	Ground	29/2 29/2	20 755.88	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 6, 7←13, 5, 8	Ground	29/2 29/2	20 755.88	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 6, 7←13, 5, 8	Ground	23/2 23/2	20 755.88	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 6, 8←13, 5, 9	Ground	23/2 23/2	20 755.88	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	2, ← 1,	Excited		20 757.4	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 4← 5, 0, 5	Ground	7/2 7/2	20 757.70	.2
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 6, 8←13, 5, 9	Ground	25/2 25/2	20 758.31	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13, 6, 7←13, 5, 8	Ground	27/2 27/2	20 758.31	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	13, 6, 8←13, 5, 9	Ground	27/2	27/2			20 758.31	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	13, 6, 7←13, 5, 8	Ground	25/2	25/2			20 758.31	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 4← 5, 0, 5	Ground	13/2	13/2			20 759.47	.2
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	6, 1, 5← 6, 1, 6	Ground					20 761.20	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 4← 5, 0, 5	Ground					20 761.87	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 4← 5, 0, 5	Ground	9/2	9/2			20 763.92	.2
DC ¹² :C ¹² Cl ³⁵	4- 603	2← 1	Ground	3/2	3/2			20 763.96	.1
C ¹² F ¹⁹ Br ⁸¹	4- 222	5, 3← 4, 3	Ground	13/2	11/2			20 764.2	
Na ²³ I ¹²⁷	1-	3← 2	Excited	5/2	3/2			20 764.43	.40
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	12, 6, 6←12, 5, 7	Ground	27/2	27/2			20 765.28	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	12, 6, 7←12, 5, 8	Ground	21/2	21/2			20 765.28	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	12, 6, 7←12, 5, 8	Ground	27/2	27/2			20 765.23	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	12, 6, 6←12, 5, 7	Ground	21/2	21/2			20 765.28	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 4← 5, 0, 5	Ground	11/2	11/2			20 765.66	.2
C ¹² HDHC ¹² HDF ¹⁹	3- 559	1, 1, 0← 1, 0, 1	Ground					20 766.0	.1
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁷⁹	4- 43	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			20 766.4	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	6, 6, 1← 6, 5, 2	Ground					20 766.70	.05
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	6, 6, 1← 6, 5, 2	Ground					20 767.19	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	6, 6, 1← 6, 5, 2	Ground					20 767.23	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	3, 2, 2← 3, 1, 3	Ground					20 767.71	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 5, 3, 2	Ground					20 768.25	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 5, 3, 2	Ground					20 768.31	.05
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	12, 6, 7←12, 5, 8	Ground	23/2	23/2			20 768.50	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	12, 6, 7←12, 5, 8	Ground	25/2	25/2			20 768.50	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	12, 6, 6←12, 5, 7	Ground	25/2	25/2			20 768.50	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	12, 6, 6←12, 5, 7	Ground	23/2	23/2			20 768.50	
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	4, 2, 2← 4, 2, 3	Ground					20 768.85	.2
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 5, 3, 2	Ground					20 769.17	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 5, 3, 2	Ground					20 769.23	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 5, 3, 2	Ground					20 770.09	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 5, 3, 2	Ground					20 770.10	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 5, 3, 2	Ground					20 770.21	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	7, 1, 6← 6, 2, 5	Ground					20 770.6	.2
C ¹² F ¹⁹ Br ⁸¹	4- 222	5, 2← 4, 2	Ground	7/2	5/2			20 770.7	
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 0, 2← 1, 0, 1	Ground	3/2	1/2			20 771.41	.05
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	5, 3, 2← 5, 3, 3	Ground					20 772.09	.2
Br ⁸¹ F ¹⁹	1-	1← 0	Excited	1/2	3/2			20 772.3	
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 0, 2← 1, 0, 1	Ground	5/2	5/2			20 772.35	.05
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	11, 6, 5←11, 5, 6	Ground	19/2	19/2			20 772.50	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	11, 6, 6←11, 5, 7	Ground	19/2	19/2			20 772.50	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	11, 6, 5←11, 5, 6	Ground	25/2	25/2			20 772.87	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	11, 6, 6←11, 5, 7	Ground	25/2	25/2			20 772.87	
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	7, 4, 3← 7, 3, 4	Ground					20 773.23	
C ¹² F ¹⁹ Br ⁸¹	4- 222	5, 2← 4, 2	Ground	13/2	11/2			20 774.3	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	11, 6, 5←11, 5, 6	Ground	21/2	21/2			20 776.10	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 6, 6←11, 5, 7	Ground	21/2	21/2			20 776.10	
Tl ²⁰⁵ Cl ³⁷	1-	4← 3	Excited					20 776.20	0.20
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 6, 5←11, 5, 6	Ground	23/2	23/2			20 776.55	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11, 6, 6←11, 5, 7	Ground	23/2	23/2			20 776.55	
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	4, 2, 2← 4, 2, 3	Ground					20 776.98	.2
Na ²³ I ¹²⁷	1-	3← 2	Excited	7/2	5/2			20 777.70	.20
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ H	3- 661	18, , ←17, ,	Ground					20 779.2	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 6, 3← 9, 5, 4	Ground	21/2	21/2			20 782.84	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 0← 4, 0	Ground	13/2	11/2			20 782.9	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 0← 4, 0	Ground	11/2	9/2			20 782.9	
DC ¹² ; C ¹² Cl ³⁵	4- 603	2← 1	Ground	1/2	3/2			20 783.80	.1
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			20 784.91	.05
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			20 785.85	.05
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 1, 8← 7, 1, 7	Ground					20 785.9	
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						20 786.80	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 6, 3← 9, 5, 4	Ground	17/2	17/2			20 787.31	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	9, 6, 3← 9, 5, 4	Ground	19/2	19/2			20 787.96	
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	5, 3, 2← 5, 3, 3	Ground					20 788.44	.2
Na ²³ I ¹²⁷	1-	3← 2	Excited	11/2	9/2			20 788.73	.20
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						20 788.81	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	8, 6, 2← 8, 5, 3	Ground	15/2	15/2			20 791.11	
Na ²³ I ¹²⁷	1-	3← 2	Excited	9/2	7/2			20 791.24	.20
Na ²³ I ¹²⁷	1-	3← 2	Excited	7/2	7/2			20 791.24	.20
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 0← 4, 0	Ground	7/2	5/2			20 791.8	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 0← 4, 0	Ground	9/2	7/2			20 791.8	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	8, 6, 2← 8, 5, 3	Ground	17/2	17/2			20 792.26	
H ₂ N ¹⁴ C ¹² DO ¹⁶	3- 155	1, 0, 1← 0, 0, 0	Ground					20 792.77	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 1← 4, 1	Ground	9/2	7/2			20 793.0	
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 0, 2← 1, 0, 1	Ground	3/2	3/2			20 793.67	.05
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						20 793.72	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	7, 6, 1← 7, 5, 2	Ground	13/2	13/2			20 794.37	
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			20 794.83	.05
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					20 795.87	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	7, 6, 1← 7, 5, 2	Ground	15/2	15/2			20 795.96	
C ¹² K ₃ C ¹² HF ₂ ¹⁹	3- 461	5, 4, 2← 5, 2, 3	Ground					20 796.2	.1
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 2← 4, 2	Ground	9/2	7/2			20 796.8	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	6, 6, 0← 6, 5, 1	Ground	11/2	11/2			20 796.85	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						20 797.01	
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			20 798.02	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	6, 6, 0← 6, 5, 1	Ground	13/2	13/2			20 799.30	
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	10, 3, 7←10, 2, 8	Ground					20 799.9	.5
N ^b O ₃ Cl ^b	4-1463	Not Reported						20 800.	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 2← 4, 2	Ground	11/2	9/2			20 800.0	
DC ¹² :C ¹² C ¹² DO ¹⁶	4- 926	2, 1, 2← 3, 0, 3	Ground					20 801.15	.02
C ¹² H ₃ Si ^b H ₂ D	3- 325	1, 0, 1← 0, 0, 0						20 801.74	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	10, 3, 7←10, 2, 8	Ground					20 801.9	.5
C ¹² F ¹⁹ Br ⁸¹	4- 222	5, 3← 4, 3	Ground	9/2		7/2		20 803.0	
Na ²³ I ¹²⁷	1-	3← 2	Excited	5/2		5/2		20 803.00	.20
O ¹⁶ *C ¹² H ₂ O ¹⁶ C ¹² H ₂ O ¹⁶ C ¹³ *H ₂	4-1102	2, 1, 1← 1, 1,	Ground					20 804.	
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		20 804.15	.05
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	10, 3, 7←10, 2, 8	Ground					20 804.2	.5
N ¹⁴ H ₃	4-1771	7, 5← 7, 5	Ground					20 804.83	.02
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 805.	5.
Tl ²⁰³ Cl ³⁷	1-	4← 3	Excited					20 806.64	0.30
C ¹² H ₂ DC ¹² HDF ¹⁹	3- 557	1, 1, 0← 1, 0, 1	Ground					20 806.9	.1
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		20 807.44	.05
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		20 809.94	.05
a-C ¹² H ₂ DSi ²⁸ HF ¹⁹	3- 204	2, 1, 1← 1, 1, 0	Ground					20 810.02	2.
C ¹² F ¹⁹ Br ⁸¹	4- 222	5, 4← 4, 4	Ground	9/2		7/2		20 811.2	
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		20 814.35	.05
1C ¹³ -C ¹² H ₅ C ¹² N ¹⁴	4-1297	8, 0, 8← 7, 0, 7	Ground					20 814.5	.1
P ³¹ H ₂ D	4-1782	4, 1, 4← 4, 0, 4	Ground					20 815.38	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 819.	5.
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 2← 2, 2, 1	Ground	3/2		1/2		20 819.6	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 1← 1, 1, 0	Ground	5/2		3/2		20 820.49	.05
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 0, 2← 1, 1, 1	Ground					20 820.89	.04
Cl ³⁵ O ₂ ¹⁶	4-1381	7, 1, 6← 6, 2, 5	Ground					20 821.7	
C ¹² F ¹⁹ Br ⁸¹	4- 222	5, 3← 4, 3	Ground	11/2		9/2		20 822.2	
C ¹² H ₂ :C ¹² F ¹⁹ Cl	4- 632	2, 1, 2← 1, 0, 1	Ground					20 822.8	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		20 823.26	.05
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		20 827.4	
C ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 0, 8← 7, 0, 7	Ground					20 828.3	.2
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 0, 3← 2, 0, 2	Ground	3/2		3/2		20 828.5	
Br ⁷⁹ F ¹⁹	1-	1← 0	Excited	1/2		3/2		20 828.9	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 1← 1, 1, 0	Ground	5/2		5/2		20 829.38	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 1← 1, 1, 0	Ground					20 830.34	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	13, 3, 12← 12, 4,	Ground					20 831.28	.04
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		20 833.26	.05
D ₂ C ¹² :C ¹² DCI ³⁵	4- 763	2, 1, 1← 1, 1, 0	Ground					20 833.55	
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		20 835.57	.05
c-DHC ¹² :C ¹² DCI ³⁵	4- 762	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		20 837.33	.2
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² Cl ³⁷	3-1062	12, 11← 11,	Ground					20 837.7	.5
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	11, 9, 3←11, 7, 4	Ground					20 838.4	.1
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		20 839.28	.05
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		20 840.44	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		20 843.07	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
B ₅ ¹¹ D ₉	4- 61	2, ← 1,	Ground					20 845.4	.2
D ₂ C ¹² :C ¹² DCI ³⁵	4- 763	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		20 847.59	.2
(C ¹³ H ₃) ₂ C ¹² H ₃ Si ^b H	3- 878	2, 2, 1← 1, 1, 1	Ground					20 848.06	.1
N ¹⁴ H ₃	4-1771	10, 8←10, 8	Ground					20 852.51	.02
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	5, 4← 4, 4	Ground	11/2		9/2		20 852.8	
C ¹² *H ₂ C ¹³ H ₂ C ¹² *C ¹³ ₂	4-1068	4, 2, 3← 3, 1, 2	Ground					20 853.91	
Na ²³ I ¹²⁷	1-	3← 2	Excited	9/2		9/2		20 854.59	.20
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 855.5	.1
HDC ¹² :C ¹² O ¹⁶	4- 713	27, 2,25←27, 2,26	Ground					20 855.93	
Cl ³⁵ O ₂ ⁶	4-1381	7, 1, 6← 6, 2, 5	Ground					20 857.2	.2
2,4,6d ₃ -C ₆ ¹² H ₅ F ¹⁹	4-1284	5, 3, 3← 4, 3, 2	Ground					20 859.0	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ Si ^b H	3- 877	2, 1, 1← 1, 0, 1	Ground					20 860.02	.1
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	21, 2,20←20, 3,17	Ground					20 861.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 862.	5.
Tl ²⁰⁵ Cl ³⁷	1-	4← 3	Ground					20 864.11	0.20
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	4, 1, 4← 3, 1, 3	Ground					20 868.2	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		20 871.4	
C ¹² HF ₃ ¹⁹	4- 281	1, ← 0,	Excited					20 872.78	.10
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	3, 1, 2← 3, 0, 3	Ground	3/2		3/2		20 872.9	.05
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	9, 3, 6← 9, 2, 7	Ground					20 873.53	.2
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹³ H	3-1073	4, ← 3,	Ground					20 874.9	.1
C ¹² DHDC ¹² HDF ¹⁹	3- 561	6, 1, 5← 6, 1, 6	Ground					20 875.3	.1
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		20 875.6	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	3, 1, 2← 3, 0, 3	Ground					20 877.60	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		20 878.4	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	3, 1, 2← 3, 0, 3	Ground	5/2		5/2		20 878.7	.05
Na ²³ I ¹²⁷	1-	3← 2	Excited	5/2		3/2		20 879.61	.20
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						20 880.	
Cl ³⁵ O ₂ ⁶	4-1381	7, 1, 6← 6, 2, 5	Ground					20 881.2	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	14,11, 3←14,11, 4	Ground					20 881.41	.1
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	3, 1, 2← 3, 0, 3	Ground	7/2		7/2		20 881.6	.05
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported						20 882.	5.
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						20 884.9	.05
C ¹² D ₂ :C ¹² DBr ^h	4- 732	3, , ← 2, ,	Ground					20 885.52	10.
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	2, 0, 2← 1, 1, 1	Ground					20 886.6	
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						20 888.2	.05
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	17, 6,12←17, 5,12	Ground					20 888.81	.2
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		20 888.9	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		20 888.9	
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	17, 6,12←17, 5,12	Ground					20 889.68	.2
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	4, 3, 2← 4, 2, 3	Ground					20 889.82	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		20 890.5	
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	17, 6,12←17, 5,12	Ground					20 890.57	.2
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		20 891.45	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		20 892.41	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Na ²³ I ¹²⁷	1-	3← 2	Excited	7/2	5/2			20 892.92	.20
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	19, 6,13←19, 6,14	Ground					20 893.	5.
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	3, 0, 3← 2, 0, 2	Ground					20 894.60	.2
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	3, 0, 3← 2, 0, 2	Ground					20 895.08	.2
Tl ²⁰³ Cl ³⁷	1-	4← 3	Ground					20 895.33	0.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					20 898.	5.
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 1← 2, 2, 0	Ground	7/2	7/2			20 898.6	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			20 898.6	
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	Not Reported	Ground					20 898.95	.2
O ¹⁶ *C ¹² H ₂ O ¹⁶ C ¹² H ₂ O ¹⁶ C ¹³ *H ₂	4-1102	2, 0, ← 1, 0,	Ground					20 900.	
Cl ³⁵ O ₂	4-1381	7, 1, 6← 6, 2, 5	Ground					20 900.6	.2
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 3← 2, 1, 2	Ground					20 900.84	.04
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 0, 3← 2, 0, 2	Ground	7/2	5/2			20 901.4	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			20 901.4	
Na ²³ I ¹²⁷	1-	3← 2	Excited	11/2	9/2			20 903.62	.20
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 0, 2← 1, 0, 1	Ground					20 903.77	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 0, 2← 1, 0, 1	Ground	5/2	3/2			20 904.87	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			20 904.87	.05
Na ²³ I ¹²⁷	1-	3← 2	Excited	7/2	7/2			20 906.05	.20
Na ²³ I ¹²⁷	1-	3← 2	Excited	9/2	7/2			20 906.05	.20
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 0, 3← 2, 0, 2	Ground					20 906.26	.2
C ¹² H ₃ Si ^b H ₂ D	3- 325	1, 0, 1← 0, 0, 0						20 906.36	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	7, 2, 5← 7, 1, 6	Ground					20 907.7	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					20 908.87	.1
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	12,10, 2←12,10, 3	Ground					20 909.7	
O ¹⁶ F ₂ ¹⁹	4-1611	27, 5,23←26, 6,20	Ground					20 910.24	.10
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					20 911.19	10.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					20 911.74	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 0, 2← 1, 0, 1	Ground	3/2	3/2			20 913.69	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			20 914.3	
Cl ³⁵ O ₂ ¹⁶	4-1381	7, 1, 6← 6, 2, 5	Ground					20 915.9	.2
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			20 916.1	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 2← 2, 2, 1	Ground	5/2	3/2			20 917.0	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 2← 2, 2, 1	Ground	3/2	3/2			20 917.0	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 2← 2, 2, 1	Ground					20 917.00	.06
Na ²³ I ¹²⁷	1-	3← 2	Excited	5/2	5/2			20 917.89	.20
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	10, 9, 1←10, 9, 2	Ground					20 918.5	.5
t-HDC ¹² :C ¹² DCl ³⁵	4- 761	2, 1, 2← 1, 1, 1	Ground					20 924.41	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 2← 2, 2, 1	Ground	3/2	1/2			20 925.7	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 0, 3← 2, 0, 2	Ground	3/2	1/2			20 925.7	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 0, 3← 2, 0, 2	Ground	5/2	3/2			20 925.7	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 1← 2, 2, 0	Ground					20 926.71	.06
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 1← 2, 2, 0	Ground	3/2	3/2			20 927.0	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 1← 2, 2, 0	Ground	5/2	3/2			20 927.0	
Br ⁸¹ F ¹⁹	1-	1← 0	Ground	1/2	3/2			20 928.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					20 928.9	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 930.6	.1
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 3← 4, 3	Ground	7/2		5/2		20 931.7	
3d-C ¹² H ₅ F ¹⁹	4-1282	5, 2, 4← 4, 2, 3	Ground					20 931.8	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		20 935.9	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 0, 3← 2, 0, 2	Ground	3/2		3/2		20 935.9	
t-HDC ¹² :C ¹² DCI ³⁵	4- 761	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		20 938.70	.2
B ¹¹ B ¹⁰ B ₃ ¹¹ D ₉	4- 66	2, 1, 1← 1, 0, 1	Ground					20 938.8	.2
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						20 941.3	.5
C ¹² H ₃ Si ^b H ₂ D	3- 325	1, 0, 1← 0, 0, 0						20 941.87	.1
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	2, 1, 1← 2, 0, 2	Ground					20 942.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					20 942.26	.1
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	11, 9, 3←11, 7, 4	Ground					20 943.0	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					20 943.6	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					20 947.05	.1
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	6, 3, 3← 6, 3, 4	Ground					20 948.04	.2
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Ground	3/2		3/2		20 948.2	
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁷	4-1472	5, ← 4,	Ground					20 950.	
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						20 950.	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						20 950.65	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					20 953.54	.1
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	1, 1, 0← 1, 0, 1	Ground					20 953.7	.1
Br ⁸¹ F ¹⁹	1-	1← 0	Excited	5/2		3/2		20 954.6	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 3← 4, 3	Ground	13/2		11/2		20 955.9	
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					20 956.6	.3
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						20 957.1	.3
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	5, 3, 2← 5, 2, 3	Ground					20 961.2	
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁵	4- 671	6, 0, 6← 5, 1, 5	Ground					20 962.10	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 1, 5← 6, 0, 6	Ground					20 963.10	.1
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 2← 4, 2	Ground	7/2		5/2		20 963.2	
C ¹² D ₃ C ¹³ O ¹⁶ F ¹⁹	3- 401	6, 3, 3← 6, 3, 4	Ground					20 963.63	.2
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	2, 0, 2← 1, 1, 1						20 964.23	.4
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						20 965.	
F ¹⁹ HC ¹² O ¹⁸	4- 274	1, 0, 1← 0, 0, 0	Ground					20 966.32	.2
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		20 967.8	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 2← 4, 2	Ground	13/2		11/2		20 968.2	
Na ²³ I ¹²⁷	1-	3← 2	Excited	9/2		9/2		20 970.52	.20
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					20 970.65	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 0, 3← 2, 0, 2	Ground	5/2		5/2		20 971.0	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 0, 4← 3, 0, 3	Ground	9/2		7/2		20 971.00	.15
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					20 971.70	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					20 973.15	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 0, 4← 3, 0, 3	Ground	11/2		9/2		20 973.66	.15
C ¹² D ₂ Cl ₂ ³⁵	4- 346	2, 1, 1← 2, 0, 2	Ground					20 976.7	.2
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	4, 2, 2← 4, 1, 3	Ground					20 977.8	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 0← 4, 0	Ground	13/2	11/2			20 978.2	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 0← 4, 0	Ground	11/2	9/2			20 978.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						20 979.	5.
Cl ³⁷ F ₃ ¹⁹	4-1372	5, 1, 4← 5, 0, 5	Ground	7/2	7/2			20 981.36	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 0, 4← 3, 0, 3	Ground	7/2	5/2			20 982.43	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 0, 4← 3, 0, 3	Ground	5/2	3/2			20 984.47	.15
s-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 203	2, 1, 1← 1, 1, 0	Ground					20 985.49	2.
Br ⁷⁹ F ₃ ¹⁹	1-	1← 0	Ground	1/2	3/2			20 985.5	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 2← 2, 2, 1	Ground	7/2	5/2			20 987.0	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 2← 2, 2, 1	Ground	5/2	5/2			20 987.0	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 0← 4, 0	Ground	9/2	7/2			20 988.5	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 0← 4, 0	Ground	7/2	5/2			20 988.5	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					20 989.	5.
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	4, 1, 4← 4, 1, 3	Ground					20 989.6	.3
D ₂ O ₃ ¹⁶	3- 42	Not Reported						20 990.	3.
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 1← 4, 1	Ground	9/2	7/2			20 990.1	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Excited	9/2	7/2			20 990.4	
Cl ³⁵ F ₃ ¹⁹	4-1371	5, 1, 4← 5, 0, 5	Ground	13/2	13/2			20 990.64	.15
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	2, 0, 2← 1, 1, 1						20 992.55	.4
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	17, 3,14←17, 3,15	Ground	16	16			20 993.06	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	17, 3,14←17, 3,15	Ground	18	18			20 993.06	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	17, 3,14←17, 3,15	Ground	17	17			20 993.56	.10
N ¹⁴ H ₃	4-1771	6, 4← 6, 4	Ground					20 994.61	.02
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 2← 4, 2	Ground	9/2	7/2			20 994.7	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Ground	5/2	5/2			20 995.2	
C ¹² DHDC ¹² HDF ¹⁹	3- 561	1, 1, 0← 1, 0, 1	Ground					20 995.7	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 1, 5← 6, 0, 6	Ground					20 995.83	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			20 996.90	.05
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			20 997.1	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 2, 1← 2, 2, 0	Ground	5/2	5/2			20 997.1	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 1← 1, 1, 0	Ground	3/2	3/2			20 998.48	.05
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 2← 4, 2	Ground	11/2	9/2			20 998.8	
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 000.	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 3← 4, 3	Ground	9/2	7/2			21 001.9	
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			21 002.59	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			21 003.51	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 005.	5.
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 0, 3← 2, 0, 2	Ground	7/2	5/2			21 005.19	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			21 006.28	.05
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	3, 1, 2← 3, 0, 3	Ground					21 006.7	
Na ²³ I ¹²⁷	1-	3← 2	Excited	7/2	5/2			21 008.40	.20
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 2← 2, 2, 1	Ground	9/2	7/2			21 009.4	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 2← 2, 2, 1	Ground	7/2	7/2			21 009.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			21 009.6	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 1← 1, 1, 0	Ground	3/2	1/2			21 011.02	.05
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	4, 3, 2← 4, 2, 3	Ground					21 011.14	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 013.62	.1
Cl ³⁷ F ₃ ¹⁹	4-1372	5, 1, 4← 5, 0, 5	Ground	9/2	9/2			21 013.87	.15
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	2, 1, 1← 1, 1, 0	Ground	1/2	1/2			21 013.94	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					21 019.01	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	17, 4, ←16, 5,	Ground					21 019.17	.1
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	5, 1, 4← 5, 0, 5	Ground					21 019.40	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			21 019.5	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 1← 2, 2, 0	Ground	7/2	7/2			21 019.5	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	10, 7, 3←10, 6, 4	Ground					21 019.7	
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	9, 2, 7← 9, 2, 8	Ground					21 019.80	.10
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Excited	5/2	3/2			21 020.1	
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	9, 2, 7← 9, 2, 8	Ground					21 021.05	.10
Cl ³⁵ F ₃ ¹⁹	4-1371	5, 1, 4← 5, 0, 5	Ground	9/2	9/2			21 021.11	.15
Na ²³ I ¹²⁷	1-	3← 2	Excited	7/2	7/2			21 021.50	.20
Na ²³ I ¹²⁷	1-	3← 2	Excited	9/2	7/2			21 021.50	.20
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Ground					21 021.98	.04
O ₃ ¹⁸	4-1845	18, 3,15←19, 2,18	Ground					21 022.5	
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	11, 9, 2←11, 8, 3	Ground					21 023.5	
Cl ³⁷ F ₃ ¹⁹	4-1372	5, 1, 4← 5, 0, 5	Ground	11/2	11/2			21 023.95	.15
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	5, 3← 4, 3	Ground	11/2	9/2			21 025.0	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			21 026.3	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 0, 3← 2, 0, 2	Ground	7/2	5/2			21 026.3	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	4, 3, 2← 4, 2, 3	Ground					21 026.60	.05
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 0, 3← 2, 0, 2	Ground	5/2	3/2			21 026.68	.05
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	2, 1, 2← 1, 0, 1	Ground					21 026.70	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 027.06	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 1, 5← 6, 0, 6	Ground					21 029.92	.1
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 0, 3← 2, 0, 2	Ground	3/2	1/2			21 030.18	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 032.	5.
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 0, 3← 2, 0, 2	Ground					21 032.00	.25
B ¹¹ B ¹⁰ B ₃ ¹¹ D ₉	4- 66	2, 2, 0← 1, 1, 0	Ground					21 032.1	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 1, 5← 6, 0, 6	Ground					21 032.25	.1
Cl ³⁵ F ₃ ¹⁹	4-1371	5, 1, 4← 5, 0, 5	Ground	11/2	11/2			21 032.67	.15
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	2, 0, 2← 1, 1, 1	Ground					21 032.72	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						21 035.	10.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 035.13	.1
K ⁴¹ I ¹²⁷	1-	6← 5	Ground					21 036.78	0.10
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			21 038.0	
C ¹³ H ₃ (C ¹² H ₃) ₂ Si ^b H	3- 877	2, 2, 0← 1, 1, 0	Ground					21 039.24	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			21 040.2	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 2← 2, 2, 1	Ground					21 043.02	.07
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	21 043.2	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	21 043.2	
Br ⁷⁹ F ¹⁹	1-	1← 0	Excited		5/2		3/2	21 045.6	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	2, 2, 1← 2, 1, 2	Ground					21 051.13	.03
C ¹² H ₃ N ¹⁴ H ₂	3- 261	17, 4, ←16, 5,	Ground					21 051.62	.1
B ₄ ¹¹ B ¹⁰ D ₉	4- 62	2, ← 1,	Ground					21 051.8	.2
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 1← 2, 2, 0	Ground					21 053.15	.06
C ^b H ₂ ClF ^b	4- 333	Not Reported						21 053.4	1.
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 1← 2, 2, 0	Ground		3/2		3/2	21 053.5	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	21 053.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 055.0	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	21 055.4	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	21 055.4	
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	3, 3, 1← 3, 1, 2	Ground					21 056.0	.3
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 057.4	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					21 060.27	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						21 068.	10.
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	5, 1, 4← 5, 0, 5	Ground					21 068.32	.05
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	5, 1, 4← 5, 0, 5	Ground					21 070.13	.05
N ¹⁴ H ₃	4-1771	11, 9←11, 9	Ground					21 070.70	.02
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	5, 1, 4← 5, 0, 5	Ground					21 071.97	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 080.9	.1
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	21 083.35	.05
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	18, 1,18←17, 2,15	Ground					21 084.05	.1
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	4, 2, 2← 4, 2, 3	Ground					21 084.9	.3
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	19, 3,16←20, 2,19	Ground					21 086.0	
(C ¹² H ₃) ₂ Si ²⁹ H ₂	3- 644	5, 1, 4← 5, 0, 5	Ground					21 086.34	.20
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	1, 1, 1← 0, 0, 0	Ground					21 086.78	
(C ¹² H ₃) ₂ Si ²⁹ H ₂	3- 644	5, 1, 4← 5, 0, 5	Ground					21 088.16	.20
(C ¹² H ₃) ₂ Si ²⁹ H ₂	3- 644	5, 1, 4← 5, 0, 5	Ground					21 089.93	.20
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	18, 1,18←17, 2,15	Ground					21 090.31	.1
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	3, 1, 3← 2, 1, 2	Ground					21 094.	5.
O ¹⁶ *C ¹² H ₂ O ¹⁶ C ¹² H ₂ O ¹⁶ C ¹² *H ₂	4-1101	2, ← 1,	Ground					21 094.3	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 3← 2, 1, 2	Ground		7/2		7/2	21 102.2	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	8, 7, 2← 8, 6, 3	Ground					21 104.3	
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	21 104.47	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 105.	5.
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	5, 1, 4← 5, 0, 5	Ground					21 106.76	.20
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						21 107.10	
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	5, 1, 4← 5, 0, 5	Ground					21 108.42	.20
Na ²³ ¹²⁷	1-	3← 2	Ground		3/2		1/2	21 108.64	.20
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	5, 1, 4← 5, 0, 5	Ground					21 110.22	.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency ' MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						21 110.25	
Br ⁸¹ F ¹⁹	1-	1 ← 0	Ground	5/2		3/2		21 110.4	
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 110.9	.1
Na ²³ I ¹²⁷	1-	3 ← 2	Ground	5/2		3/2		21 111.67	.20
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 1, 5 ← 6, 0, 6	Ground					21 115.40	.1
B ¹¹ B ¹⁰ B ¹¹ D ₉	4- 66	2, 2, 1 ← 1, 1, 1	Ground					21 117.2	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	14, 2,13 ← 13, 3,10	Ground					21 119.5	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	7, 2, 5 ← 7, 1, 6	Ground	17/2		17/2		21 123.0	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	7, 2, 5 ← 7, 1, 6	Ground	11/2		11/2		21 123.0	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	7, 2, 5 ← 7, 1, 6	Ground	13/2		13/2		21 123.0	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	7, 2, 5 ← 7, 1, 6	Ground	15/2		15/2		21 123.0	
Na ²³ I ¹²⁷	1-	3 ← 2	Ground	7/2		5/2		21 124.58	.20
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 2 ← 2, 2, 1	Ground	7/2		5/2		21 126.9	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 2 ← 2, 2, 1	Ground	5/2		5/2		21 126.9	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						21 127.0	
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	5, 4, 2 ← 4, 4, 1	Ground					21 128.5	.1
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 0, 3 ← 2, 0, 2	Ground	9/2		7/2		21 128.81	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 131.1	.1
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 0, 3 ← 2, 0, 2	Ground	7/2		5/2		21 132.01	.05
c-C ¹² HD:C ¹² DBr ^{a1}	4- 746	3, 1, 3 ← 2, 1, 2	Ground	3/2		3/2		21 134.2	.2
N ¹⁴ H ₃	4-1771	4, 1 ← 4, 1	Ground					21 134.29	.02
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	5, 4, 1 ← 4, 4, 0	Ground					21 134.6	.1
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	2, 0, 2 ← 1, 0, 1	Ground					21 134.95	.10
Na ²³ I ¹²⁷	1-	3 ← 2	Ground	11/2		9/2		21 135.35	.20
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	7, 1, 6 ← 7, 0, 7	Ground					21 135.78	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 1 ← 2, 2, 0	Ground	7/2		5/2		21 137.0	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 2, 1 ← 2, 2, 0	Ground	5/2		5/2		21 137.0	
Na ²³ I ¹²⁷	1-	3 ← 2	Ground	7/2		7/2		21 137.49	.20
Na ²³ I ¹²⁷	1-	3 ← 2	Ground	9/2		7/2		21 137.49	.20
O ^b O ^b O ^b	4-1847	Not Reported						21 141.0	
Na ²³ I ¹²⁷	1-	3 ← 2	Ground	3/2		3/2		21 141.93	.20
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 0, 3 ← 2, 0, 2	Ground	7/2		7/2		21 143.3	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 144.	5.
B ₂ ¹⁰ B ₃ ¹¹ D ₉	4- 63	2, 1, 1 ← 1, 0, 1	Ground					21 146.	1.0
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	2, 0, 2 ← 1, 0, 1	Ground					21 148.76	.10
Tl ²⁰⁵ I ¹²⁷	1-	13 ← 12	Ground	25/2		23/2		21 148.78	0.05
Tl ²⁰⁵ I ¹²⁷	1-	13 ← 12	Ground	21/2		19/2		21 148.78	0.05
Tl ²⁰⁵ I ¹²⁷	1-	13 ← 12	Ground	23/2		21/2		21 148.78	0.05
Na ²³ I ¹²⁷	1-	3 ← 2	Ground	5/2		5/2		21 148.85	.20
Tl ²⁰⁵ I ¹²⁷	1-	13 ← 12	Ground	29/2		27/2		21 149.81	0.10
Tl ²⁰⁵ I ¹²⁷	1-	13 ← 12	Ground	27/2		25/2		21 149.81	0.10
Tl ²⁰⁵ I ¹²⁷	1-	13 ← 12	Ground	31/2		29/2		21 149.81	0.10
C ¹³ H ₃ Si ²⁸ H ₃	3- 312	1, ← 0,						21 150.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Excited	5/2		5/2		21 153.1	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	13, 2←12, 3	Ground					21 153.6	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 0, 8← 7, 0, 7	Ground					21 157.0	
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		21 157.81	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 158.	5.
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁷	4- 672	8, 1, 7← 8, 0, 8	Ground					21 161.6	1.
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 0, 3← 2, 0, 2	Ground	3/2		1/2		21 162.20	.05
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		21 164.7	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 165.	5.
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	5, 3, 3← 4, 3, 2	Ground					21 165.0	.1
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	2, 0, 2← 1, 0, 1	Ground					21 165.26	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	13, 2←12, 3	Ground					21 165.4	
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		21 166.97	.05
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		21 170.52	.05
s-C ¹² HD ₂ C ¹² HO ¹⁶	3- 475	9, 1, 8← 9, 1, 9	Ground					21 170.68	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		21 174.6	.2
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 175.	
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	2, 0, 2← 1, 0, 1	Ground					21 179.40	.10
Br ⁸¹ F ¹⁹	1-	1← 0	Excited	3/2		3/2		21 181.7	
K ³⁹ I ¹²⁷	1-	6← 5	Excited					21 184.73	0.10
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		21 185.9	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 186.9	.1
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		21 188.89	.05
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Excited	7/2		5/2		21 189.5	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					21 190.	5.
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	1, 0, 1← 0, 0, 0	Excited					21 190.7	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Excited	5/2		3/2		21 191.0	.2
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		21 192.78	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 194.0	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Ground					21 196.72	.05
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	2, 0, 2← 1, 0, 1	Ground					21 197.28	.10
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 197.5	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ Si ^b H	3- 877	2, 2, 1← 1, 1, 1	Ground					21 199.01	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 202.2	.1
N ¹⁵ H ₃	4-1772	3, 1← 3, 1	Ground					21 202.30	.02
Br ⁷⁹ F ¹⁹	1-	1← 0	Ground	5/2		3/2		21 202.6	
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² H	3-1077	4, 1, 4← 3, 1, 3	Ground					21 204.4	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	1, 0, 1← 0, 0, 0	Ground	0		1		21 206.56	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	1, 0, 1← 0, 0, 0	Ground	2		1		21 207.43	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F'	F ₁	F		
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	1, 0, 1← 0, 0, 0	Ground	1		1		21 207.96	.1
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		21 208.90	.05
2,4,6-d ₃ -C ₆ H ₅ F ¹⁹	4-1284	5, 3, 2← 4, 3, 1	Ground					21 209.8	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		21 210.8	.1
B ₃ ¹¹ B ₂ ¹⁰ D ₉	4- 64	2, 2, 0← 1, 1, 0	Ground					21 211.	1.0
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	2, 0, 2← 1, 0, 1	Ground					21 211.54	.10
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		21 212.3	.1
C ¹³ H ₃ Si ²⁸ H ₃	3- 312	1, ← 0,						21 213.04	
t-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 554	6, 1, 5← 6, 1, 6	Ground					21 217.3	.1
Cs ¹³³ Br ⁷⁹	1-	10← 9	Excited					21 218.66	0.20
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 0, 5← 4, 1, 4	Ground	13/2		11/2		21 220.85	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 0, 5← 4, 1, 4	Ground	7/2		5/2		21 220.85	.15
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	13, 2←12, 3	Ground					21 221.7	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Excited	3/2		3/2		21 222.7	.2
O ¹⁶ F ₂ ¹⁹	4-1611	14, 2,12←15, 1,15	Ground					21 224.06	.10
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	7, ← 6,	Ground					21 224.56	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	5, 1, 4← 5, 0, 5	Ground					21 225.3	.5
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 2, 3← 5, 1, 4	Ground	3		4		21 226.3	.2
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					21 228.05	
DN ¹⁴ O ₃ ¹⁶	3- 32	10, 7, 3←10, 7, 4	Ground					21 229.43	
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 230.	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 231.7	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 2← 2, 2, 1	Ground	3/2		1/2		21 231.7	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	13, 2←12, 3	Ground					21 233.4	
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		21 233.95	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		21 235.9	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					21 236.4	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						21 236.46	
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 2, 3← 5, 1, 4	Ground	4		5		21 237.5	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 0, 5← 4, 1, 4	Ground	9/2		7/2		21 238.52	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 0, 5← 4, 1, 4	Ground	11/2		9/2		21 238.52	.15
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						21 239.52	
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	2, 1, 2← 1, 0, 1	Ground					21 240.70	.1
B ₂ ¹⁰ B ₃ ¹¹ D ₉	4- 63	2, 2, 0← 1, 1, 0	Ground					21 241.	1.0
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	3, 1, 2← 3, 0, 3	Ground					21 242.54	.05
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 242.6	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	9, 6, 3← 9, 5, 4	Ground					21 242.8	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					21 244.2	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Ground	3/2		3/2		21 244.5	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 244.56	.1
C ¹² *H ₂ S ³⁴ C ¹² *H ₂	4- 852	6, 2, 5← 6, 2, 4	Ground					21 245.8	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 2, 3← 5, 1, 4	Ground	5		6		21 250.4	.2
HDC ¹² :C ¹² O ¹⁶	4- 713	9, 1, 8← 9, 1, 9	Ground					21 254.31	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Cs ¹³³ Br ⁸¹	1-	10← 9	Ground					21 254.44	0.10
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	3, 1, 3← 2, 1, 2	Ground					21 254.5	.1
a-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 942	2, 0, 2← 1, 1, 1	Ground					21 256.85	.05
t-HDC ¹² :C ¹² DC ¹³⁷	4- 764	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		21 257.18	.2
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 258.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 260.9	.1
S ³² P ³¹ F ₃ ¹⁹	4-1691	4, ← 3,	Ground					21 260.95	.05
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	2, 1, 2← 1, 1, 1	Ground					21 262.1	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		21 264.0	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 2, 3← 5, 1, 4	Ground	6		7		21 264.3	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	12,12, 1←12,10, 2	Ground					21 269.9	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 271.	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Excited	5/2		5/2		21 271.4	.2
C ¹³ H ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 893	8, ← 7,	Ground					21 278.0	.5
K ³⁹ I ¹²⁷	1-	6← 5	Excited					21 279.07	0.10
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						21 279.8	.5
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 284.4	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		21 285.1	.1
N ¹⁴ H ₃	4-1771	5, 3← 5, 3	Ground					21 285.27	.02
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 285.4	.2
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 285.9	
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		21 289.31	.05
HC ¹² O ¹⁶ O ¹⁸ H	3- 77	1, 0, 1← 0, 0, 0	Ground					21 289.64	.1
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	14, 2,12←14, 2,13	Ground					21 292.13	.3
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	3, 0, 3← 2, 0, 2	Ground					21 292.2	.1
Cs ¹³³ Br ⁷⁹	1-	10← 9	Excited					21 292.40	0.20
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		21 292.8	.1
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	2, 1, 1← 1, 0, 1	Ground					21 292.84	.1
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 1, 3← 2, 1, 2	Ground					21 293.52	.05
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	1, 0, 1← 0, 0, 0	Ground					21 293.9	.3
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 297.12	.04
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						21 298.60	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		21 299.6	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		21 299.6	
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	6, 2, 5← 6, 2, 4	Ground					21 299.7	.1
N ^b O ₂ Cl ^b	4-1463	Not Reported						21 300.	
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 300.0	.05
HC ¹² O ¹⁸ O ¹⁶ H	3- 76	1, 0, 1← 0, 0, 0	Ground					21 301.67	.1
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	2, 0, 2← 1, 1, 1	Ground					21 302.6	
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	14, 2,12←14, 2,13	Ground					21 303.65	.4
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		21 304.8	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 1← 2, 2, 0	Ground	7/2		7/2		21 304.8	
C ¹² D ₃ Cl ³⁷	4- 425	1, 0← 0, 0	Ground	3/2		3/2		21 305.15	.08

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			21 306.5	.1
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 310.	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Excited	7/2	5/2			21 314.8	.2
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			21 315.48	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			21 315.8	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 0, 3← 2, 0, 2	Ground	7/2	5/2			21 315.8	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 318.1	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Ground					21 319.36	.05
Br ⁷⁹ F ¹⁹	1-	1← 0	Excited	3/2	3/2			21 319.4	
C ¹² D ₃ Cl ³⁷	4- 425	1, 0← 0, 0	Ground	5/2	3/2			21 319.79	.08
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 0, 3← 2, 0, 2	Ground					21 319.8	.3
(C ¹² H ₃) ₂ C ¹² :C ¹² HD	3- 944	2, 0, 2← 1, 1, 1	Ground					21 319.80	
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			21 320.07	.05
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² H	3-1077	4, 1, 3← 3, 1, 2	Ground					21 320.8	.1
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 321.8	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 2, 2← 4, 2, 3	Ground					21 323.23	.1
(C ¹² H ₃) ₃ Si ³⁰ H	3- 875	2, ← 1,	Ground					21 323.35	.20
HN ¹⁵ C ¹² O ¹⁶	4- 302	1, , ← 0, ,	Ground					21 323.5	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 2← 2, 2, 1	Ground					21 326.95	.06
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 2← 2, 2, 1	Ground	3/2	3/2			21 327.2	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 2← 2, 2, 1	Ground	5/2	3/2			21 327.2	
(C ¹² H ₃) ₃ C ¹² C ¹³ :C ¹² H	3-1074	4, ← 3,	Ground					21 327.2	.1
B ₂ ¹⁰ B ₃ ¹¹ D ₉	4- 63	2, 2, 1← 1, 1, 1	Ground					21 329.	1.0
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	10, 1, 9←10, 0,10	Ground					21 330.46	.2
C ¹² D ₃ Cl ³⁷	4- 425	1, 0← 0, 0	Ground	1/2	3/2			21 331.51	.08
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			21 331.72	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 1← 2, 2, 0	Ground					21 332.29	.07
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 1← 2, 2, 0	Ground	3/2	3/2			21 332.5	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 1← 2, 2, 0	Ground	5/2	3/2			21 332.5	
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 333.0	.2
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 1← 1, 1, 0	Ground	3/2	3/2			21 334.11	.05
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			21 336.2	.1
Br ⁸¹ F ¹⁹	1-	1← 0	Ground	3/2	3/2			21 337.5	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			21 337.9	.1
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	1, 1, 1← 0, 0, 0	Ground					21 337.99	.20
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 0, 3← 2, 0, 2	Ground	5/2	3/2			21 339.0	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 0, 3← 2, 0, 2	Ground	3/2	1/2			21 339.0	
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	1, 1, 1← 0, 0, 0	Ground					21 339.18	.20
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 340.	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						21 340.	10.
(C ¹² H ₃) ₂ Si ³⁰ H ₂	3- 645	1, 1, 1← 0, 0, 0	Ground					21 340.20	.20
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			21 340.42	.05
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 343.8	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			21 344.00	.05
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						21 345.	10.
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 345.8	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					21 346.97	.1
C ¹² D ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 182	3, 0, 3← 2, 0, 2	Ground					21 347.74	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 347.8	.2
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 1← 1, 1, 0	Ground	3/2	1/2			21 349.93	.05
(C ¹² H ₃) ₃ Si ²⁸ H	3- 873	2, ← 1,	Ground					21 351.36	.20
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	2, 1, 1← 1, 1, 0	Ground	1/2	1/2			21 353.66	.05
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						21 355.	10.
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	12, 9, 3←12, 8, 4	Ground					21 360.1	
DC ¹² N ¹⁴	4- 292	7← 7	Excited					21 360.15	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	4, 3, 1← 4, 2, 2	Ground					21 360.6	
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			21 362.64	.30
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Ground	3/2	3/2			21 362.8	
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 2← 1, 1, 1	Ground	3/2	3/2			21 364.7	.6
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ .E	3- 196	2, 1, 1← 1, 1, 0	Ground					21 365.37	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 195	2, 1, 1← 1, 1, 0	Ground					21 365.37	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	7, 5, 2← 7, 5, 3	Ground					21 366.1	.1
Cs ¹³³ Br ⁷⁹	1-	10← 9	Excited					21 366.36	0.20
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 2← 1, 1, 1	Ground	5/2	5/2			21 367.47	.20
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	11, 9, 2←11, 9, 3	Ground					21 368.2	
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	3, 1, 2← 3, 0, 3	Ground					21 370.	5.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 371.5	.1
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			21 371.53	.15
K ³⁹ I ¹²⁷	1-	6← 5	Excited					21 373.63	0.10
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .E	3- 702	2, 1, 1← 1, 1, 0						21 373.90	.2
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			21 376.08	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	10, 8, 2←10, 8, 3	Ground					21 377.91	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground	3/2	3/2			21 378.65	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .A	3- 701	2, 1, 1← 1, 1, 0						21 378.87	.2
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	1, 1, 1← 0, 0, 0	Ground					21 379.40	.20
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						21 380.	10.
(C ¹² H ₃) ₃ Si ²⁸ H	3- 871	2, ← 1,	Ground					21 380.58	.10
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	1, 1, 1← 0, 0, 0	Ground					21 380.70	.20
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	1, 1, 1← 0, 0, 0	Ground					21 382.00	.20
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			21 385.02	.1
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	9, 8, 1← 9, 8, 2	Ground					21 385.1	.5
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			21 388.49	.1
C ₆ ² H ₅ F ¹⁹	4-1281	5, 2, 4← 4, 2, 3	Ground					21 389.2	.1
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	5, 3, 2← 4, 3, 1	Ground					21 391.0	.1
N ¹⁴ H ₃	4-1771	12,10←12,10	Ground					21 391.55	.05
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	8, 5, 3← 8, 4, 4	Ground					21 391.6	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground	3/2	1/2			21 394.83	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 2← 2, 2, 1	Ground	7/2	5/2			21 395.1	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		21 395.1	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Excited	3/2		1/2		21 395.6	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		21 395.6	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		21 398.18	.1
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3- 461	6, 5, 2← 6, 3, 3	Ground					21 399.2	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	7, 2, 5← 6, 4, 2	Ground					21 399.5	
Re ^b O ₃ ¹⁶ F ¹⁹	4-1594	3, ← 2,	Ground					21 400.	50.
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						21 400.	10.
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		21 400.0	.2
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² Cl ³⁵	3-1061	12, ←11,	Ground					21 400.5	.5
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 400.6	.1
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		21 400.7	
S ³² F ₃ ¹⁹ Cl	4-1422	6, ← 5,	Ground					21 401.	.5
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 1← 2, 2, 0	Ground	5/2		5/2		21 401.1	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		21 401.1	
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	8, 5, 3← 8, 5, 4	Ground					21 405.82	.2
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		21 408.5	
C ¹² D :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		21 408.5	
C ¹² H ₃ Si ²⁸ DF ¹⁹ ₂ -E	3- 198	2, 1, 1← 1, 1, 0	Ground					21 409.56	
C ¹² H ₃ Si ²⁸ DF ¹⁹ ₂ -A	3- 197	2, 1, 1← 1, 1, 0	Ground					21 409.56	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						21 411.4	.2
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁵	3-1022	4, 3← 3, 3	Ground					21 414.8	.2
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁵	3-1022	4, 1← 3, 1	Ground					21 414.8	.2
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁵	3-1022	4, 2← 3, 2	Ground					21 414.8	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	2, 1, 2← 1, 1, 1	Ground					21 416.3	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Excited	7/2		5/2		21 419.7	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Excited	5/2		3/2		21 419.7	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Ground					21 420.24	.05
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		21 420.3	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		21 420.3	
C ¹² H ₂ F ¹⁹ ₂	4- 351	Not Reported	Ground					21 423.20	.10
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		21 424.66	.05
F ¹⁹ O ₂ ¹⁶	3- 11	5, 1, 4← 5, 0, 5	Ground					21 424.8	.5
C ¹² D ₂ Cl ₂ ³⁵	4- 346	3, 1, 2← 3, 0, 3	Ground					21 425.	5.
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		21 425.0	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 1← 2, 2, 0	Ground	7/2		7/2		21 425.0	
As ⁷⁵ Cl ₃ ³⁵	4- 11	5, ← 4,	Excited					21 426.	10.
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	2, 1, 2← 1, 1, 1	Ground					21 427.79	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	3, 1, 2← 3, 1, 3	Ground					21 427.8	
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					21 428.	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		21 428.29	.05
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					21 428.5	1.
C ¹² *H ₂ C ¹² D:C ¹² *D	4-1033	3, 2, 1← 3, 2, 2	Ground					21 429.0	
C ¹² H ₂ Cl ₂ ³⁵ F ¹⁹	4- 331	22, 1,22←21, 2,19	Ground					21 429.80	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 431.9	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	21 432.6	
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Ground		5/2		3/2	21 432.6	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	21 433.79	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 434.	5.
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 1, 3← 2, 1, 2	Ground					21 434.1	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						21 435.	10.
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground		3/2		3/2	21 436.27	.05
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 437.0	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	22, 1,22←21, 2,19	Ground					21 437.05	.1
Cs ¹³³ Br ⁷⁹	1-	10← 9	Excited					21 440.65	0.20
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	21 440.9	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	21 440.9	
2,4,6-d ₃ -C ¹² H ₅ F ¹⁹	4-1284	6, 1, 6← 5, 1, 5	Ground					21 441.2	.1
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	2, 1, 1← 1, 0, 1	Ground					21 441.30	.2
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground		5/2		5/2	21 442.73	.05
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	6, 1, 5← 6, 0, 6	Ground					21 443.07	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground					21 443.38	.05
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	3, 1, 2← 3, 0, 3	Ground					21 444.6	
C ¹² H ₃ C ¹² HDC ¹² H ₃	3- 784	3, 1, 2← 3, 0, 3	Ground					21 445.48	.06
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	3, 0, 3← 2, 0, 2	Ground					21 446.	5.
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	4, 1← 3, 1	Ground					21 446.0	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 0, 3← 2, 0, 2	Ground					21 446.15	.2
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	21 446.21	.05
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	21 446.41	.05
c-DHC ¹² :C ¹² DC ¹³⁵	4- 762	2, 1, 1← 1, 1, 0	Ground					21 446.65	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	12,10, 2←12, 9, 3	Ground					21 449.36	.05
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 450.	
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	13, 2,11←12, 3,10	Ground					21 450.	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	12,10, 2←12, 9, 3	Ground					21 450.11	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	12,10, 2←12, 9, 3	Ground					21 450.14	
C ¹² H C ¹² H Br ⁸¹	3- 522	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	21 450.32	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 0, 5← 4, 1, 4	Ground		7/2		5/2	21 450.87	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 0, 5← 4, 1, 4	Ground		13/2		11/2	21 450.87	.15
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 450.9	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground		3/2		1/2	21 452.27	.05
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 2← 2, 2, 1	Ground					21 453.22	.06
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	4, ← 3,	Ground					21 453.5	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	21 453.6	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	21 453.6	
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 1, 2← 2, 1, 1	Ground		3/2		1/2	21 454.68	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	2, 1, 1← 1, 1, 0	Ground		1/2		1/2	21 455.62	.05
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	8, 1, 7← 8, 0, 8	Ground					21 456.12	
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	4, ← 3,	Ground					21 456.4	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 1← 2, 2, 0	Ground					21 458.14	.06

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 1← 2, 2, 0	Ground	5/2	3/2			21 458.9	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 1← 2, 2, 0	Ground	3/2	3/2			21 458.9	
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			21 459.19	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 461.	5.
c-DHC ¹² :C ¹² DCI ³⁵	4- 762	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			21 461.10	.2
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					21 461.5	1.
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	8, 5, 3← 8, 5, 4	Ground					21 462.35	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	4, 2, 2← 4, 1, 3	Ground					21 463.58	
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	4, ← 3,	Ground					21 465.5	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 0, 3← 2, 0, 2	Ground	3/2	1/2			21 468.6	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 0, 3← 2, 0, 2	Ground	5/2	3/2			21 468.6	
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 2, 3← 5, 1, 4	Ground					21 468.6	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 0, 5← 4, 1, 4	Ground	11/2	9/2			21 471.39	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 0, 5← 4, 1, 4	Ground	9/2	7/2			21 471.39	.15
As ⁷⁵ Cl ₃ ³⁵	4- 11	5, ← 4,	Ground					21 472.	10.
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	5, 4, 1← 5, 3, 2	Ground					21 474.0	
Br ⁷⁹ F ¹⁹	1-	1← 0	Ground	3/2	3/2			21 475.4	
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	5, 3, 2← 5, 3, 3	Ground					21 475.8	.1
Cs ¹³³ F ¹⁹	1-	2← 1	Excited					21 477.5	1.0
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 477.62	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Ground	3/2	3/2			21 477.7	
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			21 477.98	.05
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 479.8	.1
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 1, 2← 2, 1, 1	Ground	5/2	3/2			21 481.07	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 2, 4← 4, 1, 3	Ground					21 481.14	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	3, 2, 2← 2, 2, 1	Ground					21 481.42	.2
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	3, 1, 2← 2, 1, 1	Ground	7/2	5/2			21 481.74	.05
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					21 483.0	1.5
C ¹² D ₂ :C ¹² DBr ⁸¹	4- 726	3, 1, 2← 2, 1, 1	Ground	7/2	7/2			21 483.7	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						21 484.0	.3
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	3, 1, 2← 2, 1, 1	Ground					21 484.8	.3
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	7, 4, 3← 7, 3, 4	Ground					21 486.3	
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	4, ← 3,	Excited					21 486.4	.1
(C ¹² H ₃) ₂ Si ²⁹ H ₂	3- 644	1, 1, 1← 0, 0, 0	Ground					21 489.88	.20
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	10, 3, 7←10, 2, 8	Ground					21 490.1	.5
(C ¹² H ₃) ₂ Si ²⁹ H ₂	3- 644	1, 1, 1← 0, 0, 0	Ground					21 491.07	.20
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	10, 3, 7←10, 2, 8	Ground					21 492.3	.5
(C ¹² H ₃) ₂ Si ²⁹ H ₂	3- 644	1, 1, 1← 0, 0, 0	Ground					21 492.33	.20
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 1, 2← 2, 1, 1	Ground	5/2	3/2			21 494.67	.05
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	10, 3, 7←10, 2, 8	Ground					21 494.8	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	6, 5, 2← 6, 3, 3	Ground					21 496.7	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						21 498.03	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	6, 5, 2← 6, 3, 3	Ground					21 498.2	
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	4, 1← 3, 1	Excited					21 499.7	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					21 500.	5.
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	6, 2, 5← 5, 3, 2	Ground					21 501.	
C ¹³ H ₃ C ¹² H ₂ Br ⁸¹	3- 531	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		21 501.20	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 508.8	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	14, 2,13←13, 3,10	Ground	25/2		23/2		21 509.9	
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	6, 1, 5← 6, 0, 6	Ground					21 511.17	.2
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 512.2	.1
Cs ¹³³ Br ⁷⁹	1-	10← 9	Excited					21 514.48	0.20
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Excited	5/2		5/2		21 516.3	
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	1, 1, 1← 2, 0, 2	Ground					21 516.74	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	5, 4, 2← 5, 3, 3	Ground					21 519.40	.05
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					21 519.5	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 519.9	.1
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 521.8	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	14, 2,13←13, 3,10	Ground	27/2		25/2		21 522.6	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	7, 1, 7← 6, 2, 4	Ground					21 523.36	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	3, 1, 3← 2, 0, 2	Ground	7/2		5/2		21 524.02	.15
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Excited	3/2		1/2		21 525.5	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		21 525.5	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						21 527.14	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		21 529.3	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	6, 2, 4← 6, 1, 5	Ground					21 533.58	.05
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		21 535.5	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		21 535.5	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		21 538.4	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		21 538.4	
C ¹² *HN ¹⁴ C ¹² HC ¹² H ₂ :C ¹² HN ¹⁴ *	4-1141	8, 6, 3← 8, 5, 4	Ground					21 539.	
Cl ³⁷ O ₂ ¹⁶	4-1382	14, 2,13←13, 3,10	Ground	29/2		27/2		21 539.8	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 1← 2, 2, 0	Ground	5/2		5/2		21 540.9	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		21 540.9	
t-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 554	6, 3, 4← 7, 2, 5	Ground					21 542.8	.1
C ¹² D ₂ :C ¹² DBr ^b	4- 732	3, , ← 2, ,	Ground					21 542.9	.1
C ¹² *HN ¹⁴ C ¹² HC ¹² H ₂ :C ¹² HN ¹⁴ *	4-1141	6, 3, 3← 6, 2, 4	Ground					21 543.	
C ¹² *H ₂ C ¹² H:C ¹² *H	4-1031	5, 3, 2← 5, 3, 3	Ground					21 544.2	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		21 545.67	.05
C ₆ H ₅ O ¹⁶ H	3-1051	7, 4, 3← 7, 3, 4	Ground					21 546.5	
S ³² *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1161	9, 4, 6← 9, 4, 5	Ground					21 547.5	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						21 547.94	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 548.	5.
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Ground					21 548.27	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 3← 2, 1, 2	Ground		3/2		1/2	21 550.04	.05
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					21 550.31	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported						21 551.	5.
HDO ₂ ¹⁶	3- 43	21, , ←21, ,						21 553.	3.
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Excited		5/2		3/2	21 554.1	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Excited		7/2		5/2	21 554.1	
C ¹² _* HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ _*	4-1141	7, 5, 3← 7, 4, 4	Ground					21 554.9	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 555.6	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	3, 1, 3← 2, 0, 2	Ground		9/2		7/2	21 557.11	.15
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 3← 2, 1, 2	Ground					21 557.2	
C ¹² _* H:C ¹² HO ¹⁶ C ¹² D:C ¹² _* H	4-1154	8, 8, 0← 8, 7, 1	Ground					21 557.6	
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 560.	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 2← 2, 2, 1	Ground		3/2		1/2	21 560.0	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					21 560.3	1.
Cl ³⁷ O ₂ ¹⁶	4-1382	14, 2,13←13, 3,10	Ground		31/2		29/2	21 561.8	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					21 562.5	1.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	3, 1, 3← 2, 0, 2	Ground		5/2		3/2	21 562.60	.15
K ³⁹ I ¹²⁷	1-	6← 5	Excited					21 563.91	0.10
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					21 564.	1.
C ¹² _* HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ _*	4-1141	11, 9, 3←11, 8, 4	Ground					21 564.	
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	8, 3, 5← 8, 2, 6	Ground					21 565.5	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 1← 2, 2, 0	Ground		3/2		1/2	21 567.2	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Ground		5/2		3/2	21 567.2	
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	21 567.2	
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	4, ← 3,	Ground					21 568.2	.3
C ¹² H ₃ C ¹² _* HO ¹⁶ C ¹² _* H ₂	3- 761	13, 9, ←14, 8,	Ground					21 568.32	.1
C ¹² _* H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² _* O ¹⁶	4-1241	4, 0, 4← 3, 0, 3	Ground					21 568.5	
C ¹² H ₃ C ¹² _* HO ¹⁶ C ¹² _* H ₂	3- 761	13, 9, ←14, 8,	Ground					21 569.20	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	21 571.56	.05
C ¹² D ₂ :C ¹² DBr ^b	4- 732	Not Reported	Ground					21 571.6	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 0, 3← 2, 0, 2	Ground		3/2		3/2	21 571.8	.2
C ¹² _* HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ _*	4-1141	6, 4, 3← 6, 3, 4	Ground					21 571.8	_g
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						21 572.00	.01
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						21 572.6	.3
C ¹² _* HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ _*	4-1141	5, 2, 3← 5, 1, 4	Ground					21 575.9	
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	9, 2, 7← 9, 1, 8	Ground		21/2		21/2	21 576.1	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	9, 2, 7← 9, 1, 8	Ground		15/2		15/2	21 576.1	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	21 576.45	.05
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	9, 2, 7← 9, 1, 8	Ground		17/2		17/2	21 577.0	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	9, 2, 7← 9, 1, 8	Ground		19/2		19/2	21 577.0	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 581.3	.2
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	2, 0, 2← 1, 1, 1	Ground					21 582.34	
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 1, 2← 2, 1, 1	Ground		3/2		1/2	21 584.83	.05
C ¹² _* HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ _*	4-1141	3, 0, 3← 2, 1, 2	Ground					21 586.9	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	3, 3, 1← 3, 1, 2	Ground					21 587.7	.3
Cs ¹³³ Br ⁷⁹	1-	10← 9	Ground					21 588.57	0.10
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	5, 4, 2← 4, 4, 1	Ground					21 588.9	.1
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		21 590.10	.05
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		21 590.35	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	3, 1, 3← 2, 0, 2	Ground	7/2		5/2		21 592.05	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	3, 1, 3← 2, 0, 2	Ground	3/2		1/2		21 595.04	.15
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 595.6	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 474	7, 1, 6← 7, 1, 7	Ground					21 596.15	.4
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	19, 1,19←18, 2,16	Ground					21 596.35	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 596.9	.1
N ¹⁵ H ₃	4-1772	5, 4← 5, 4	Ground					21 597.86	.02
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	3, 1, 3← 2, 0, 2	Ground					21 598.5	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	19, 1,19←18, 2,16	Ground					21 600.0	1.0
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 0, 3← 2, 0, 2	Ground	5/2		5/2		21 600.5	.1
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					21 601.5	1.5
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	5, 4, 1← 4, 4, 0	Ground					21 601.5	.1
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	22, 1,22←21, 2,19	Ground					21 603.23	.1
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	10, 1, 9←10, 0,10	Ground					21 604.26	.2
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	6, 1, 5← 6, 0, 6	Ground					21 604.75	.05
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		21 605.90	.05
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		21 606.22	.25
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	6, 1, 5← 6, 0, 6	Ground					21 606.33	.05
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		21 606.77	.05
C ₆ ¹² H ₅ F ¹⁹	4-1281	51,16,35←51,16,36	Ground					21 608.	5.
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Excited	7/2		7/2		21 608.0	
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		21 608.49	.25
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	22, 1,22←21, 2,19	Ground					21 608.55	.1
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		21 609.91	.25
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		21 612.01	.05
N ¹⁴ O ₂ F ¹⁹	4-1581	2, 2, 1← 2, 0, 2	Ground					21 613.7	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 614.33	.1
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	5, 3, 3← 4, 3, 2	Ground					21 614.6	.1
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		21 616.46	.05
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	7, 1, 6← 7, 1, 7	Ground					21 616.82	.2
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	3, 1, 3← 2, 1, 2	Ground					21 617.0	.1
Cs ¹³³ F ¹⁹	1-	2← 1	Excited					21 617.09	.60
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		21 617.29	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Rb ⁸⁵ I ¹²⁷	1-	11←10	Ground					21 617.58	0.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 618.	5.
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	5, 1, 4← 5, 0, 5	Ground					21 620.05	.1
C ¹² D ₂ :C ¹² DBr ⁷⁹	4- 725	3, 1, 2← 2, 1, 1	Ground		7/2		7/2	21 621.4	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	34,17, ←33,18,	Ground					21 625.78	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	34,17, ←33,18,	Ground					21 626.39	.1
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 1, 2← 2, 1, 1	Ground		5/2		3/2	21 626.46	.05
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						21 626.6	1.
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	21 628.84	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	21 630.32	.25
C ¹² HD ₂ C ¹² HDF ¹⁹	3- 558	3, 1, 2← 3, 0, 3	Ground					21 630.4	.1
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	12,10, 3←12, 9, 4	Ground					21 631.	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	6, 1, 5← 6, 0, 6	Ground		9/2		9/2	21 631.36	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	21 631.4	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 2← 2, 2, 1	Ground		7/2		7/2	21 631.4	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	3, 1, 3← 2, 0, 2	Ground		9/2		7/2	21 631.72	.15
2,4,6d ₃ -C ₆ H ₅ F ¹⁹	4-1284	5, 1, 4← 4, 1, 3	Ground					21 631.8	.1
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	6, 1, 5← 6, 0, 6	Ground		15/2		15/2	21 632.81	.2
C ¹³ H ₃ C ¹² H ₂ Br ⁷⁹	3- 528	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	21 634.34	.05
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	6, 1, 5← 6, 0, 6	Ground					21 634.98	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	6, 1, 5← 6, 0, 6	Ground		11/2		11/2	21 637.41	.2
N ¹⁵ H ₃	4-1772	4, 3← 4, 3	Ground					21 637.91	.02
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	3, 1, 3← 2, 0, 2	Ground		5/2		3/2	21 638.05	.15
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	21 638.5	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 1← 2, 2, 0	Ground		7/2		7/2	21 638.5	.1
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	6, 1, 5← 6, 0, 6	Ground		13/2		13/2	21 638.88	.2
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						21 640.36	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 642.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	21 644.8	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	21 644.8	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	21 647.4	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	21 647.4	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 3← 2, 1, 2	Ground		9/2		7/2	21 647.5	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 3← 2, 1, 2	Ground		3/2		1/2	21 647.5	.1
2,4,6d ₃ -C ₆ H ₅ F ¹⁹	4-1284	6, 0, 6← 5, 0, 5	Ground					21 648.5	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	2, 0, 2← 1, 0, 1	Ground					21 648.80	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Excited		3/2		3/2	21 648.9	.1
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	1, 1, 1← 0, 0, 0	Ground					21 649.82	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 650.	5.
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	1, 1, 1← 0, 0, 0	Ground					21 651.08	.05
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						21 651.27	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 0, 3← 2, 0, 2	Ground					21 651.91	.04
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	1, 1, 1← 0, 0, 0	Ground					21 652.35	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						21 657.0	2.
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	7, 4, 3← 7, 3, 4	Ground					21 658.1	
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	5, ← 4,	Ground					21 659.15	.07
K ³⁹ I ¹²⁷	1-	6← 5	Excited					21 659.38	0.10
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 2← 2, 2, 1	Ground					21 660.16	.04
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 2← 2, 2, 1	Ground	3/2		3/2		21 660.2	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 2← 2, 2, 1	Ground	5/2		3/2		21 660.2	.1
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	Not Reported	Ground					21 661.4	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						21 661.71	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						21 662.0	.2
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	5, ← 4,	Excited					21 662.45	.07
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	8, 2, 6← 8, 2, 7	Ground					21 663.10	.35
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	4, 2, 2← 4, 1, 3	Ground					21 664.	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 1← 2, 2, 0	Ground					21 667.30	.04
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		21 667.5	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 1← 2, 2, 0	Ground	3/2		3/2		21 667.5	.1
N ¹⁵ H ₃	4-1772	6, 5← 6, 5	Ground					21 667.93	.02
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 2← 2, 2, 1	Ground	3/2		1/2		21 668.2	.2
C ¹² D ₃ Cl ³⁵	4- 424	1, 0← 0, 0	Ground	3/2		3/2		21 668.88	.08
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ D·HC ¹² O ¹⁶ O ¹⁶ D	3- 664	19, , ←18, ,	Ground					21 669.7	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Ground	3/2		3/2		21 670.2	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		21 671.5	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 0, 3← 2, 0, 2	Ground	3/2		1/2		21 671.5	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 673.9	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		21 675.6	.1
HN ¹⁴ O ₃ ¹⁶	3- 31	3, 3, 1← 3, 2, 2	Ground					21 676.16	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	3, 1, 3← 2, 0, 2	Ground	3/2		1/2		21 677.89	.15
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 678.	5.
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	8, 2, 6← 8, 2, 7	Ground					21 680.87	.35
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 682.7	.1
C ¹² :H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	9, 8, 1← 9, 7, 2	Ground					21 683.1	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 0, 3← 2, 0, 2	Ground	3/2		3/2		21 683.5	.2
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	10, 1, 9← 9, 2, 8	Ground					21 684.0	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	10, 7, 3←10, 7, 4	Ground					21 685.3	
C ¹² D ₃ Cl ³⁵	4- 424	1, 0← 0, 0	Ground	5/2		3/2		21 687.46	.08
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						21 689.0	.3
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Excited	5/2		5/2		21 689.6	.1
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					21 692.	2.
Ge ⁷² HCl ₃ ³⁵	4-1492	5, ← 4,	Ground					21 693.05	.07
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						21 693.5	.5
s-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 247	10, 2, 8←10, 2, 9	Ground					21 694.80	.10
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	5, 1, 4← 5, 0, 5	Ground					21 695.4	.2
Ge ⁷² HCl ₃ ³⁵	4-1492	5, ← 4,	Excited					21 696.76	.07
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 696.8	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	5, 1, 4← 5, 0, 5	Ground					21 697.58	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	5, 1, 4← 5, 0, 5	Ground					21 698.15	.1
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	2, 2, 1← 2, 1, 2	Ground					21 699.70	
s-C ¹² K ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	5, 1, 4← 5, 0, 5	Ground					21 699.75	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 4, 7← 9, 5, 4	Ground					21 700.53	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		21 701.13	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 4, 7← 9, 5, 4	Ground					21 701.65	.1
t-HDC ¹² :C ¹² DCI ³⁵	4- 761	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		21 701.78	.2
C ¹² D ₃ Cl ³⁵	4- 424	1, 0← 0, 0	Ground	1/2		3/2		21 702.36	.08
N ¹⁴ H ₃	4-1771	4, 2← 4, 2	Ground					21 703.36	.02
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		21 703.77	.08
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		21 703.77	.08
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 4, 7← 9, 5, 4	Ground					21 704.80	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	4, 2, 2← 4, 1, 3	Ground					21 706.9	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 707.	5.
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	11, 8, 3←11, 7, 4	Ground					21 707.8	
O ^b O ^b O ^b	4-1847	Not Reported						21 708.0	
C ¹² H ₃ C ¹³ :C ¹² C ¹² F ¹⁹ ₃	3- 894	8, ← 7,	Ground					21 708.5	.5
C ¹² H ₃ O ¹⁶ H	3- 211	28, 2, ←28, 1,	Ground					21 708.68	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		21 710.6	.2
S ³² O ¹⁶ F ¹⁹ ₂	4-1621	Not Reported						21 711.98	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	15, 5, ←16, 4,	Ground					21 712.65	.1
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		21 713.25	.11
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		21 713.25	.11
C ¹² HCl ³⁵ :C ¹² F ¹⁹ ₂	4- 611	8, 2, 6← 8, 1, 7	Ground	15/2		15/2		21 715.0	.1
C ¹² HCl ³⁵ :C ¹² F ¹⁹ ₂	4- 611	8, 2, 6← 8, 1, 7	Ground	17/2		17/2		21 715.0	.1
C ¹² HCl ³⁵ :C ¹² F ¹⁹ ₂	4- 611	8, 2, 6← 8, 1, 7	Ground	19/2		19/2		21 715.9	.1
C ¹² HCl ³⁵ :C ¹² F ¹⁹ ₂	4- 611	8, 2, 6← 8, 1, 7	Ground	13/2		13/2		21 715.9	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 0, 3← 2, 0, 2	Ground	5/2		5/2		21 718.1	.2
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		21 718.20	.05
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		21 719.68	.20
C ¹² HD:C ¹ DBr ^b	4- 749	Not Reported						21 722.5	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		21 722.7	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 725.	5.
F ¹⁹ N ¹⁴ N ¹⁴ F ¹⁹ ₂	3- 21	3, 1, 2← 2, 0, 2	Ground					21 725.0	.2
C ¹² HCl ³⁷ :C ¹² F ¹⁹ ₂	4- 612	9, 2, 7← 9, 1, 8	Ground					21 725.5	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Excited	7/2		5/2		21 725.5	.2
C ¹² HCl ³⁷ :C ¹² F ¹⁹ ₂	4- 612	9, 2, 7← 9, 1, 8	Ground					21 726.3	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Excited	5/2		3/2		21 726.7	.2
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		21 726.8	
Ge ⁷⁰ HCl ³⁵ ₃	4-1491	5, ← 4,	Ground					21 728.34	.07
HDO ¹⁶ ₂	3- 43	21, , ←21, ,						21 730.	3.
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		21 731.8	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		21 731.8	.1
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		21 732.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	1, 0, 1←0, 0, 0	Ground		21 732.72	.10
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3←2, 1, 2	Ground		21 733.35	.07
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	5, ←4,	Excited		21 733.38	.07
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		21 734.6	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 1←2, 2, 0	Ground	7/2 5/2	21 738.8	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 2, 1←2, 2, 0	Ground	5/2 5/2	21 738.8	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 2, 3←5, 1, 4	Ground	5 6	21 739.2	.2
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2←2, 1, 1	Ground	3/2 1/2	21 739.9	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2←2, 1, 1	Ground	9/2 7/2	21 739.9	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported			21 739.9	.1
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	10, 8, 2←10, 8, 3	Ground		21 742.3	
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ←2, ,	Ground		21 742.6	.3
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 3←2, 1, 2	Ground	5/2 5/2	21 742.93	.25
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 0, 3←2, 0, 2	Ground	5/2 3/2	21 744.70	.05
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	8, 6, 2←8, 6, 3	Ground		21 745.2	.3
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 3←2, 1, 2	Ground	3/2 1/2	21 745.74	.25
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported			21 746.6	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported			21 746.7	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 0, 3←2, 0, 2	Ground	7/2 7/2	21 747.4	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3←2, 1, 2	Ground	7/2 5/2	21 747.6	.1
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 3←2, 1, 2	Ground	9/2 7/2	21 747.91	.25
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			21 748.	5.
C ¹² H ₃ C ¹² H ₂ C ¹² H ₃	3- 781	1, 1, 0←1, 0, 1	Ground		21 748.37	.03
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2←2, 1, 1	Ground		21 749.84	.05
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2←2, 1, 1	Excited	5/2 3/2	21 750.6	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2←2, 1, 1	Excited	7/2 5/2	21 750.6	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported			21 751.	10.
s-C ¹² HD ₂ C ¹² HO ¹⁶	3- 475	8, 1, 7←8, 1, 8	Ground		21 752.05	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 2←2, 2, 1	Ground	7/2 7/2	21 753.6	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 2←2, 2, 1	Ground	9/2 7/2	21 753.6	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	10, 2, 8←10, 1, 9	Ground	19/2 19/2	21 754.4	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	10, 2, 8←10, 1, 9	Ground	21/2 21/2	21 754.4	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			21 755.	5.
K ³⁹ I ¹²⁷	1-	6←5	Excited		21 755.19	0.10
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	10, 2, 8←10, 1, 9	Ground	23/2 23/2	21 755.5	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	10, 2, 8←10, 1, 9	Ground	17/2 17/2	21 755.5	.1
Cs ¹³³ F ¹⁹	1-	2←1	Excited		21 757.58	.60
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3←2, 1, 2	Excited	3/2 3/2	21 760.0	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 1←2, 2, 0	Ground	7/2 7/2	21 760.9	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 1←2, 2, 0	Ground	9/2 7/2	21 760.9	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	6, 1, 5←6, 0, 6	Ground		21 761.79	
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ .A	3- 197	Not Reported	Ground		21 763.5	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2←2, 1, 1	Ground	5/2 3/2	21 763.7	
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2←2, 1, 1	Ground	7/2 5/2	21 763.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quant jm Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
Cl ³⁷ O ₂ ⁶	4-1382	4, 2, 3← 5, 1, 4	Ground	4	5			21 764.2	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						21 764.4	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 765.23	.1
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ .A	3- 197	Not Reported	Ground					21 766.5	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 766.6	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						21 768.25	
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			21 769.84	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			21 771.95	.25
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁷	4- 672	8, 1, 7← 7, 2, 6	Ground					21 772.3	1.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 4, 6← 9, 5, 5	Ground					21 772.39	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 0, 3← 2, 0, 2	Ground	7/2	5/2			21 774.1	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			21 774.1	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 4, 6← 9, 5, 5	Ground					21 774.11	.1
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground	3/2	1/2			21 774.92	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 4, 6← 9, 5, 5	Ground					21 776.73	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Excited	7/2	7/2			21 779.4	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 0, 3← 2, 0, 2	Ground					21 779.57	.06
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 780.	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			21 780.69	.01
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 781.6	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Ground	3/2	3/2			21 781.7	.2
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			21 782.67	.01
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 783.	5.
N ¹⁵ H ₃	4-1772	3, 2← 3, 2	Ground					21 783.98	.02
Cl ³⁷ O ₂ ⁶	4-1382	4, 2, 3← 5, 1, 4	Ground	3	4			21 784.1	.2
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						21 785.	10.
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² C ¹² N ¹⁴	3-1023	4, 3, ← 3, 3,	Ground					21 788.	2.0
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² C ¹² N ¹⁴	3-1023	4, 2, ← 3, 2,	Ground					21 788.	2.0
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 2← 2, 2, 1	Ground					21 788.03	.04
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 2← 2, 2, 1	Ground	3/2	3/2			21 788.2	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 2← 2, 2, 1	Ground	5/2	3/2			21 788.2	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						21 792.83	
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ D	3- 663	19, , ←18, ,	Ground					21 794.2	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 1← 2, 2, 0	Ground					21 795.45	.04
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 1← 2, 2, 0	Ground	5/2	3/2			21 795.6	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 1← 2, 2, 0	Ground	3/2	3/2			21 795.6	.1
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						21 795.6	.2
Cl ³⁷ O ₂ ⁶	4-1382	4, 2, 3← 5, 1, 4	Ground	2	3			21 797.7	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 3← 2, 1, 2	Ground	7/2	7/2			21 800.6	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 0, 3← 2, 0, 2	Ground	5/2	3/2			21 803.1	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 0, 3← 2, 0, 2	Ground	3/2	1/2			21 803.1	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 804.	5.
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	3, 2, 2← 3, 1, 3	Ground					21 804.0	
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	10, 2, 8←10, 1, 9	Ground					21 805.4	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 805.5	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	8, 7, 1← 8, 7, 2	Ground					21 805.9	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 807.	5.
C ¹² D ₂ :C ¹² HBr ⁸¹	4- 724	3, 1, 2← 2, 1, 1	Ground		7/2		7/2	21 807.1	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Excited		5/2		5/2	21 808.6	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Ground		3/2		3/2	21 816.4	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 817.	5.
N ¹⁴ H ₃	4-1771	14,11←14,11	Ground					21 818.1	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						21 819.28	
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	8, 8, 0← 8, 7, 1	Ground					21 822.2	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Excited		9/2		7/2	21 822.8	.2
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	3, 2, 2← 3, 0, 3	Ground					21 825.	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	21 828.23	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						21 828.32	
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					21 829.	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Ground		5/2		5/2	21 829.7	.2
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	15, 2,14←14, 3,11	Ground					21 834.20	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	11, 2, 9←11, 2,10	Ground		10		10	21 834.41	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	11, 2, 9←11, 2,10	Ground		12		12	21 834.41	.10
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 1← 2, 2, 0	Ground		5/2		7/2	21 835.19	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	21 835.19	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 1← 2, 2, 0	Ground		7/2		7/2	21 835.19	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	21 835.19	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 2← 2, 2, 1	Ground		5/2		7/2	21 835.19	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 2← 2, 2, 1	Ground		7/2		7/2	21 835.19	.25
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	11, 2, 9←11, 2,10	Ground		11		11	21 835.32	.10
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	15, 2,14←14, 3,11	Ground					21 836.00	.1
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	21 837.10	
DN ¹⁴ C ¹³ S ³²	4- 314	Not Reported	Ground					21 839.	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	21 839.67	.05
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	21 839.67	.05
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	5, 3, 2← 5, 2, 3	Ground					21 840.5	.2
DN ¹⁴ C ¹² S ³²	4- 312	2, 1, 2← 1, 1, 1	Ground					21 841.04	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					21 842.31	.04
C ¹² F ₃ C ¹² O ¹⁶ O ¹⁶ D·HC ¹² O ¹⁶ O ¹⁶ H	3- 662	19, , ←18, ,	Ground					21 842.7	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Ground		9/2		7/2	21 844.3	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 844.7	.1
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	5, 3, 2← 5, 2, 3	Ground					21 844.75	.2
C ₆ H ₅ F ¹⁹	4-1281	12, 3, 9←12, 3,10	Ground					21 846.3	
N ¹⁵ H ₃	4-1772	7, 6← 7, 6	Ground					21 846.41	.02
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	9, 7, 3← 9, 5, 4	Ground					21 847.6	.1
C ₆ H ₅ F ¹⁹	4-1281	12, 3,10←12, 3,11	Ground					21 848.	5.0
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					21 849.	
(C ¹² H ₃) ₃ C ¹² C ¹³ N ¹⁴	3-1024	4, 2← 3, 2	Ground					21 850.	10.0
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² C ¹² N ¹⁴	3-1023	4, 1, ← 3, 1,	Ground					21 850.	10.0

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
(C ¹² H ₃) ₃ C ¹² C ¹³ N ¹⁴	3-1024	4, 1← 3, 1	Ground					21 850.	10.0
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 850.	
(C ¹² H ₃) ₃ C ¹² C ¹³ N ¹⁴	3-1024	4, 3← 3, 3	Ground					21 850.	10.0
K ³⁹ I ¹²⁷	1-	6← 5	Ground					21 851.32	0.10
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	21 852.23	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	21 852.23	.25
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Excited		7/2		5/2	21 853.1	.2
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 2← 2, 2, 1	Ground					21 853.3	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	21 853.46	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Excited		9/2		7/2	21 855.9	
C ₆ H ₅ C ¹² N ¹⁴	4-1291	8, 2, 7← 7, 2, 6	Ground					21 856.4	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Ground					21 856.51	.08
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	2, 1, 2← 1, 1, 1	Ground					21 856.8	
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 2← 1, 1, 1	Ground		5/2		3/2	21 857.42	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 858.	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 858.	5.
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	21 858.69	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 1← 2, 2, 0	Ground		3/2		3/2	21 858.69	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	21 858.69	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	21 858.69	.25
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 2← 1, 1, 1	Ground		3/2		3/2	21 860.70	.10
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	21 860.97	.05
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 861.0	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	21 861.55	.05
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground					21 862.0	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	21 862.13	
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 2← 1, 1, 1	Ground		5/2		5/2	21 864.59	.15
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 3← 2, 1, 2	Ground		3/2		3/2	21 865.5	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 865.5	.1
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	21 867.70	.01
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	10, 7, 3←10, 7, 4	Ground					21 868.34	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 869.1	.2
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Ground		9/2		7/2	21 869.2	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Ground		3/2		1/2	21 869.2	
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 2← 1, 1, 1	Ground		7/2		5/2	21 869.38	.08
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	21 869.65	.01
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	21 871.10	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	21 871.10	.25
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 871.7	.3
Tl ²⁰⁵ Cl ³⁵	1-	4← 3	Ground					21 872.16	0.10
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	3, 1, 3← 2, 1, 2	Ground					21 873.0	.05
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	21 873.1	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	21 873.7	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 2← 2, 2, 1	Ground		5/2		5/2	21 873.7	.1
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 2← 1, 1, 1	Ground		3/2		1/2	21 873.93	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			21 874.3	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 874.6	.2
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 2← 2, 2, 1	Ground	3/2	1/2			21 876.90	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 877.1	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 878.	5.
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 2← 1, 1, 1	Ground	1/2	1/2			21 879.07	.10
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Ground					21 880.88	.05
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			21 881.2	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 2, 1← 2, 2, 0	Ground	5/2	5/2			21 881.2	.1
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Excited	7/2	5/2			21 884.0	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Excited	5/2	3/2			21 884.0	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 1← 2, 2, 0	Ground	3/2	1/2			21 885.70	
S ³⁴ F ₅ Cl ³⁵	4-1423	6, ← 5,	Ground					21 886.64	.5
C ¹² D ₂ :C ¹² HBr ^b	4- 731	3, , ← 2, ,	Ground					21 887.5	
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported						21 889.	5.
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						21 890.	
C ¹² _* H:C ¹² DO ¹⁶ C ¹² D:C ¹² _* H	4-1156	2, 1, 2← 1, 0, 1	Ground					21 890.9	
DN ¹⁴ C ¹² S ³²	4- 312	2, 0, 2← 1, 0, 1	Ground					21 891.66	.5
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 0, 3← 2, 0, 2	Ground	7/2	7/2			21 893.15	.1
S ³² F ₅ Cl ³⁵	4-1421	6, ← 5,	Ground					21 894.39	.5
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 2← 2, 2, 1	Ground	9/2	7/2			21 896.58	.10
DN ¹⁴ C ¹² S ³²	4- 312	Not Reported	Ground					21 897.	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Ground	7/2	5/2			21 897.2	
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Ground	5/2	3/2			21 897.2	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 897.9	.1
Cs ¹³³ F ¹⁹	1-	2← 1	Excited					21 898.21	.40
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 2← 2, 2, 1	Ground	9/2	7/2			21 898.43	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 901.0	.1
C ¹² H ₂ :C ¹² F ¹⁹ Cl	4- 632	2, 2, 1← 2, 1, 2	Ground					21 902.50	
Tl ²⁰³ Cl ³⁵	1-	4← 3	Ground					21 903.16	0.20
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			21 903.41	.10
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 3← 2, 1, 2	Ground	5/2	5/2			21 905.2	.2
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			21 905.25	.10
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	3, 1, 2← 3, 1, 3	Ground					21 907.91	.2
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	8, 2, 6← 8, 1, 7	Ground					21 908.77	.2
s-C ¹² H ₂ DS ²⁸ H ₂ F ¹⁹	3- 247	2, 1, 2← 1, 1, 1	Ground					21 909.03	.10
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -A	3- 513	2, 1, 2← 1, 1, 1	Ground					21 909.38	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	3, 1, 2← 3, 1, 3	Ground					21 909.71	.2
C ¹² _* HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ _*	4-1141	2, 2, 1← 1, 1, 0	Ground					21 914.85	
C ¹² H ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 891	8, ← 7,	Ground					21 915.2	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						21 915.40	.1
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 2← 2, 2, 1	Ground	7/2	5/2			21 915.73	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 0, 1← 0, 0, 0	Ground	0	1			21 916.06	.10
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Excited	7/2	7/2			21 916.3	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 2← 2, 2, 1	Ground	5/2	5/2			21 916.77	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			21 916.77	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 2← 2, 2, 1	Ground	7/2	5/2			21 916.77	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 2← 2, 2, 1	Ground	3/2	5/2			21 916.77	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 1← 2, 2, 0	Ground	5/2	5/2			21 916.77	.25
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 2, 1← 2, 2, 0	Ground	3/2	5/2			21 916.77	.25
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			21 917.0	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 0, 1← 0, 0, 0	Ground	2	1			21 917.40	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 0, 1← 0, 0, 0	Ground	1	1			21 918.33	.10
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 2← 1, 1, 1	Ground	5/2	3/2			21 918.85	.02
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	6, 1, 5← 6, 1, 6	Ground					21 919.74	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 921.	5.
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						21 923.25	.1
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			21 924.14	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	13,10, 3←13,10, 4	Ground					21 924.71	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						21 924.75	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	6, 1, 5← 6, 1, 6	Ground					21 926.40	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 926.8	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 3← 2, 1, 2	Ground					21 927.64	.04
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground					21 930.00	.1
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			21 930.15	.02
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	8, 2, 6← 8, 1, 7	Ground					21 931.0	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground					21 931.48	.1
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	8, 2, 6← 8, 1, 7	Ground					21 932.0	.1
C ₆ H ₅ C ¹² :C ¹² H	3-1091	8, 7, 1← 7, 7, 0	Ground					21 933.8	.5
C ₆ H ₅ C ¹² :C ¹² H	3-1091	8, 7, 2← 7, 7, 1	Ground					21 933.8	.5
H ₂ N ¹⁵ C ¹² HO ¹⁶	3- 156	7, 1, 6← 6, 2, 5	Ground					21 933.95	
C ¹² H ₂ F ₂ ¹⁹	4- 351	46,11,36←45,12,33	Ground					21 934.33	.10
C ¹² H ₂ F ₂ ¹⁹	4- 351	46,11,35←45,12,34	Ground					21 934.33	.10
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 3← 2, 1, 2	Ground	7/2	7/2			21 937.15	.05
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 0, 1← 0, 0, 0	Ground	0	1			21 937.80	.10
C ¹² F ₃ ¹⁹ C ¹² O ¹⁶ O ¹⁶ H·HC ¹² O ¹⁶ O ¹⁶ H	3- 661	19, , ←18, ,	Ground					21 938.5	
K ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 2← 1, 1, 1	Ground	1/2	1/2			21 938.65	.02
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 0, 1← 0, 0, 0	Ground	2	1			21 939.17	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	1, 0, 1← 0, 0, 0	Ground	1	1			21 940.06	.10
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			21 941.1	.1
a-C ¹² H ₂ DS ³² C ¹² H ₃	3- 605	4, 1, 3← 4, 0, 4	Ground					21 942.79	.05
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			21 943.0	.1
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	2, 0, 2← 1, 1, 1	Ground					21 943.47	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					21 943.5	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						21 945.5	.5
C ₆ H ₅ C ¹² :C ¹² H	3-1091	8, 6, 3← 7, 6, 2	Ground					21 945.9	.5
C ₆ H ₅ C ¹² :C ¹² H	3-1091	8, 6, 2← 7, 6, 1	Ground					21 945.9	.5
s-C ¹² H ₂ DS ³² C ¹² H ₃	3- 604	4, 1, 3← 4, 0, 4	Ground					21 947.29	.05
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	4, 1, 3← 4, 0, 4	Ground					21 948.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₂ :C ¹² HBr ⁷⁹	4- 723	3, 1, 2← 2, 1, 1	Ground	7/2		7/2		21 949.4	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 950.6	.2
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		21 951.20	
DN ¹⁴ C ¹² S ³²	4- 312	2, 1, 1← 1, 1, 0	Ground					21 951.82	.5
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	10, 7, 3←10, 7, 4	Ground					21 952.95	.2
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	9, 2, 7← 9, 1, 8	Ground					21 953.55	.2
t-C ¹ HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Excited	3/2		3/2		21 955.7	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	3, 2, 2← 3, 0, 3	Ground					21 957.1	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 958.	5.
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		21 959.77	
(C ¹² H ₃) ₂ C ¹² :C ¹² HD	3- 944	2, 1, 2← 1, 0, 1	Ground					21 961.51	
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	2, 0, 2← 1, 0, 1	Ground					21 964.5	
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	Not Reported						21 965.	
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	4, 3, 2← 4, 2, 3	Ground					21 965.1	
C ^b H ₂ ^b Cl ^b F ^b	4- 333	Not Reported						21 965.24	.1
C ^b H ₂ ^b Cl ^b F ^b	4- 333	Not Reported						21 966.23	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		21 966.25	.05
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		21 966.25	.05
C ¹² H ₅ C ¹² :C ¹² H	3-1091	8, 5, 3← 7, 5, 2	Ground					21 966.7	.5
C ¹² H ₅ C ¹² :C ¹² H	3-1091	8, 5, 4← 7, 5, 3	Ground					21 966.7	.5
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					21 970.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						21 970.	5.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 971.3	.2
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		21 972.29	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 1← 2, 2, 0	Ground	5/2		7/2		21 972.29	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		21 972.29	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 2← 2, 2, 1	Ground	5/2		7/2		21 972.29	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		21 972.29	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 1← 2, 2, 0	Ground	7/2		7/2		21 972.29	.25
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 0, 3← 2, 0, 2	Ground					21 972.6	
C ¹² H ₃ S ³² H	3- 221	9, 2, ←10, 1,	Ground					21 973.2	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						21 973.7	.2
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	5, ← 4,	Ground					21 974.00	.3
F ¹⁹ H ₂ C ¹² H ₂ Cl ³⁵	3- 441	5, 0, 5← 4, 1, 4	Ground					21 979.4	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Ground	3/2		3/2		21 979.8	.1
C ¹² H ₂ F ₂ ¹⁹	4- 351	9, 1, 9← 8, 2, 6	Ground					21 980.68	.10
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 2← 2, 2, 1	Ground					21 981.1	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					21 981.2	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 2← 2, 2, 1	Ground	5/2		3/2		21 981.20	
HN ¹⁴ C ¹² O ¹⁶	4- 301	1, 0, 1← 0, 0, 0	Ground					21 981.7	.02
C ¹² H ₂ DC ¹² HDF ¹⁹	3- 557	2, 1, 1← 2, 0, 2	Ground					21 984.1	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	9, 7, 2← 9, 7, 3	Ground					21 984.30	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						21 985.	10.
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	2, 0, 2← 1, 1, 1	Ground					21 986.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F'	F ₁	F		
$\dot{\text{C}}^{12}\text{H}_3\text{Si}^b\text{H}_2\text{D}$	3- 325	10, 1, 9←10, 1,10						21 986.66	
$\text{HC}^{13}:\text{C}^{12}\text{C}^{12}\text{DO}^{16}$	4- 922	Not Reported						21 987.	.5
$\text{g-C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{C}^{12}\text{H}_2\text{Cl}^{37}$	3- 774	9, 2, 7← 9, 1, 8	Ground					21 987.43	.2
$\text{C}^{12}\text{H}_2:\text{C}^{12}\text{DBr}^b$	4- 729	3, , ← 2, ,	Ground					21 989.0	
$\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{Br}^{79}$	3- 521	3, 2, 1← 2, 2, 0	Ground					21 989.7	
$\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{Br}^{79}$	3- 521	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	21 990.15	
$\text{C}^b_*\text{H}_2^b\text{N}^b\text{H}^b\text{C}^b_*\text{H}_2^b$	4- 863	Not Reported						21 991.0	.5
$\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{Br}^{79}$	3- 521	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	21 991.60	.05
$\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{Br}^{79}$	3- 521	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	21 992.44	.05
$\text{HN}^{14}\text{C}^{12}\text{O}^{16}$	4- 301	1, 0, 1← 0, 0, 0	Excited					21 993.0	.02
$\text{N}^{14}\text{O}^{16}\text{Br}^{79}$	4- 121	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	21 993.86	.25
$\text{N}^{14}\text{O}^{16}\text{Br}^{79}$	4- 121	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	21 993.86	.25
$\text{t-C}^{12}\text{HD}:\text{C}^{12}\text{DBr}^{81}$	4- 747	3, 1, 3← 2, 1, 2	Ground		7/2		7/2	21 994.6	.1
$\text{g-C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{C}^{12}\text{H}_2\text{Cl}^{37}$	3- 774	8, 2, 6← 8, 1, 7	Ground					21 996.93	.2
$\text{C}_6^{12}\text{H}_5\text{F}^{19}$	4-1281	5, 4, 2← 4, 4, 1	Ground					21 997.3	.1
$\text{HC}^{13}:\text{C}^{12}\text{C}^{12}\text{DO}^{16}$	4- 922	Not Reported						21 998.	.5
$(\text{C}^{12}\text{H}_3)_3\text{C}^{12}\text{C}^{12}\text{N}^{14}$	3-1021	4, 3← 3, 3	Ground					21 999.8	.2
$(\text{C}^{12}\text{H}_3)_3\text{C}^{12}\text{C}^{12}\text{N}^{14}$	3-1021	4, 1← 3, 1	Ground					21 999.8	.2
$(\text{C}^{12}\text{H}_3)_3\text{C}^{12}\text{C}^{12}\text{N}^{14}$	3-1021	4, 2← 3, 2	Ground					21 999.8	.2
$\text{N}^b\text{O}_2^b\text{Cl}^b$	4-1463	Not Reported						22 000.	
$\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{Br}^{79}$	3- 521	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	22 001.05	.10
$\text{N}^{14}\text{O}^{16}\text{Br}^{79}$	4- 121	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	22 001.07	.25
$\text{N}^{14}\text{O}^{16}\text{Br}^{79}$	4- 121	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	22 001.07	.25
$\text{N}^{14}\text{O}^{16}\text{Br}^{79}$	4- 121	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	22 001.07	.25
$\text{N}^{14}\text{O}^{16}\text{Br}^{79}$	4- 121	3, 2, 1← 2, 2, 0	Ground		3/2		3/2	22 001.07	.25
$\text{C}^{12}\text{HD}_2\text{C}^{12}\text{HDF}^{19}$	3- 558	6, 1, 5← 6, 1, 6	Ground					22 001.9	.1
$\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{Br}^{79}$	3- 521	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	22 002.99	.01
$\text{C}_6^{12}\text{H}_5\text{C}^{12}:\text{C}^{12}\text{H}$	3-1091	8, 4, 5← 7, 4, 4	Ground					22 003.4	.5
$\text{t-C}^{12}\text{HD}:\text{C}^{12}\text{DBr}^{79}$	4- 745	3, 1, 3← 2, 1, 2	Excited		5/2		5/2	22 003.4	.2
$\text{C}_6^{12}\text{H}_5\text{F}^{19}$	4-1281	5, 4, 1← 4, 4, 0	Ground					22 006.1	.1
$\text{C}^{12}\text{HD}:\text{C}^{12}\text{DBr}^b$	4- 749	Not Reported						22 007.2	.2
$\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{Br}^{79}$	3- 521	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	22 007.57	.10
$\text{C}_6^{12}\text{H}_5\text{C}^{12}:\text{C}^{12}\text{H}$	3-1091	8, 4, 4← 7, 4, 3	Ground					22 009.5	.5
$\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2\text{Br}^{79}$	3- 521	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	22 009.50	.10
$\text{t-HDC}^{12}:\text{C}^{12}\text{DCI}^{37}$	4- 764	2, 1, 1← 1, 1, 0	Ground					22 009.90	
$\text{C}^{12}_*\text{H}:\text{C}^{12}\text{DC}^{12}\text{H}:\text{C}^{12}\text{HN}^{14}_*\text{H}$	4-1184	10, 7, 3←10, 7, 4	Ground					22 010.1	
$\text{C}^{12}\text{H}_2:\text{C}^{12}\text{DBr}^b$	4- 729	3, , ← 2, ,	Ground					22 010.5	
$\text{DC}^{12}\text{O}^{16}\text{O}^{16}\text{H}$	3- 73	1, 0, 1← 0, 0, 0	Ground					22 011.3	.3
$(\text{C}^{12}\text{H}_3\text{C}^{12}\text{H}_2)_2\text{O}^{16}$	3-1011	Not Reported						22 015.	
$\text{t-C}^{12}\text{HD}:\text{C}^{12}\text{HBr}^{81}$	4- 743	3, 2, 2← 2, 2, 1	Ground		3/2		1/2	22 015.5	.1
$\text{C}^{12}\text{H}_3\text{C}^{13}\text{H}_2\text{Br}^{81}$	3- 529	3, 1, 2← 2, 1, 1	Ground		3/2		1/2	22 016.12	.05
$\text{N}^{14}\text{O}^{16}\text{Br}^{79}$	4- 121	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	22 016.97	.25
$\text{N}^{14}\text{O}^{16}\text{Br}^{79}$	4- 121	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	22 016.97	.25
$\text{t-C}^{12}\text{HD}:\text{C}^{12}\text{DBr}^{79}$	4- 745	3, 1, 3← 2, 1, 2	Excited		9/2		7/2	22 017.3	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HN ¹⁴ C ¹² O ¹⁶	4- 301	1, 0, 1← 0, 0, 0	Excited					22 017.3	.02
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		22 017.62	.05
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		22 018.5	.1
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	10, 2, 8←10, 2, 9	Ground					22 018.5	.1
Si ²⁸ D ₃ C ¹² H:C ¹² H ₂	3- 612	4, 1, 3← 4, 0, 4	Ground					22 020.31	.05
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 3, 8←11, 2, 9	Ground	10		11		22 021.47	.10
t-HDC ¹² :C ¹² DCI ³⁷	4- 764	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		22 021.70	.2
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 3, 8←11, 2, 9	Ground	11		12		22 022.37	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	10, 3, 8←11, 2, 9	Ground	9		10		22 022.37	.10
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	8, 3, 6← 7, 3, 5	Ground					22 023.6	.5
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	5, 1, 4← 5, 0, 5	Ground	11/2		11/2		22 024.46	.05
C ^b ₂ *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						22 025.	10.
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		22 027.3	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	7, 2, 5← 7, 1, 6	Ground	11/2		11/2		22 027.80	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	7, 2, 5← 7, 1, 6	Ground	17/2		17/2		22 027.80	
C ₆ ¹² H ₅ F ¹⁹	4-1281	5, 3, 3← 4, 3, 2	Ground					22 028.8	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	7, 2, 5← 7, 1, 6	Ground	13/2		13/2		22 028.93	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	7, 2, 5← 7, 1, 6	Ground	15/2		15/2		22 028.93	
C ¹² DHDC ¹² HDF ¹⁹	3- 561	2, 1, 1← 2, 0, 2	Ground					22 029.5	.1
C ¹² D ₂ Cl ³⁵	4- 346	4, 1, 3← 4, 0, 4	Ground					22 030.	5.
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 0, 3← 2, 0, 2	Ground	3/2		3/2		22 030.2	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						22 030.52	.1
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	5, 1, 4← 5, 0, 5	Ground	9/2		9/2		22 030.70	.05
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	3, 1, 3← 2, 1, 2	Ground					22 031.6	.05
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	2, 1, 2← 1, 0, 1	Ground					22 033.1	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						22 034.25	.1
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	7, 3, 5← 7, 3, 4	Ground					22 034.3	.1
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	5, 1, 4← 5, 0, 5	Ground	11/2		11/2		22 035.23	.05
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		22 035.68	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		22 036.2	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		22 036.2	.1
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	9, 7, 2← 9, 7, 3	Ground					22 037.0	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 037.0	.1
Cs ¹³³ F ¹⁹	1-	2← 1	Ground					22 038.51	.20
(C ¹² H ₃) ₃ N ¹⁴ :B ¹¹ (C ¹² H ₃) ₃	3-1081	7, ← 6,						22 039.	10.
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	1, 1, 1← 0, 0, 0	Ground					22 039.23	.35
O ¹⁶ F ₂ ¹⁹	4-1611	24, 6,18←25, 5,21	Ground					22 039.31	.10
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					22 040.	
C ¹² H ₃ C ¹³ H ₂ Br ⁸¹	3- 529	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		22 040.21	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			22 041.3	.1
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	5, 1, 4← 5, 0, 5	Ground	9/2	9/2			22 042.53	.05
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Ground	3/2	1/2			22 042.9	.1
N ¹⁵ H ₃	4-1772	2, 1← 2, 1	Ground					22 044.28	.02
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					22 045.	2.
C ¹² HDHC ¹² HDF ¹⁹	3- 559	2, 1, 1← 2, 0, 2	Ground					22 045.2	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 2, 2← 2, 2, 1	Ground	7/2	5/2			22 045.2	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Excited	7/2	5/2			22 046.3	.1
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	5, 1, 4← 5, 0, 5	Ground	13/2	13/2			22 046.34	.05
Si ²⁹ H ₂ F ₂ ¹⁹	4-1602	3, 1, 2← 3, 0, 3	Ground					22 046.65	.10
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Excited	3/2	3/2			22 048.4	.1
C ₆ H ₅ Br ^b	4-1261	Not Reported						22 050.	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 050.9	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 051.2	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	9, 5, 5← 9, 5, 4	Ground					22 051.38	
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 1← 1, 1, 0	Ground	5/2	3/2			22 052.07	.10
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	5, 1, 4← 5, 0, 5	Ground	7/2	7/2			22 052.26	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 2, 2← 2, 2, 1	Ground	5/2	3/2			22 053.1	.1
C ¹² D ₃ S ³⁴ HD ₂	3- 331	12, 1, 11← 12, 1, 12						22 053.50	.3
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Ground					22 054.15	.05
H ₂ O ₂ ⁶	3- 41	Not Reported						22 054.5	.2
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .E	3- 192	9, 5, 5← 9, 5, 4	Ground					22 054.51	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 2← 2, 2, 1	Ground	7/2	5/2			22 055.60	
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 1← 1, 1, 0	Ground	3/2	3/2			22 056.03	.10
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 1← 1, 1, 0	Ground	5/2	5/2			22 056.03	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 2, 2← 2, 2, 1	Ground	9/2	7/2			22 056.7	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 056.78	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 057.	5.
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 0, 3← 2, 0, 2	Ground	5/2	5/2			22 058.1	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 060.71	
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	5, 1, 4← 5, 0, 5	Ground	13/2	13/2			22 061.39	.05
C ¹² H ₃ Si ³⁰ HF ₂ ¹⁹	3- 194	2, 1, 1← 1, 1, 0	Ground					22 061.84	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Ground	3/2	3/2			22 062.1	.2
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 1← 1, 1, 0	Ground	7/2	5/2			22 062.26	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 2, 2← 2, 2, 1	Ground	3/2	1/2			22 062.7	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			22 062.7	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						22 063.28	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			22 064.16	
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					22 065.	2.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 068.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² _* D:C ¹² DC ¹² D:C ¹² DN ¹⁴ _* H	4-1185	9, 8, 2← 9, 7, 3	Ground					22 068.0	
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		22 068.11	.18
C ¹² H ₂ C ¹² D ₂ Br ⁷⁹	3- 524	5, 1, 4← 5, 0, 5	Ground	7/2		7/2		22 068.60	.05
C ¹³ _* H:C ¹² HO ¹⁶ C ¹² H:C ¹² _* H	4-1157	6, 4, 2← 6, 4, 3	Ground					22 069.0	.1
a-C ¹² H ₂ DS ³² C ¹² H ₃	3- 605	1, 1, 1← 0, 0, 0	Ground					22 069.05	.05
C ¹² _* H ₂ C ¹² H ₂ C ¹² _* HCl ³⁷	4-1082	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		22 069.5	.1
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 1← 2, 2, 0	Ground	5/2		5/2		22 069.77	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		22 069.77	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		22 069.77	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		22 069.77	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 2← 2, 2, 1	Ground	3/2		5/2		22 069.77	.25
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 2, 1← 2, 2, 0	Ground	3/2		5/2		22 069.77	.25
C ¹² _* HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² _* H ₂	4-1251	11, 8, 4← 11, 7, 4	Ground					22 070.	5.
N ¹⁴ O ¹⁶ Cl ³⁷	4-1452	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		22 071.33	.16
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		22 071.4	.1
(C ¹² D ₃) ₂ O ¹⁶	3- 592	4, 1, 3← 4, 0, 4	Excited					22 072.2	.2
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		22 072.5	.1
C ¹² _* H ₂ C ¹² H ₂ C ¹² _* HCl ³⁷	4-1082	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		22 072.7	.1
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	2, 1, 1← 2, 0, 2	Ground					22 076.1	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 080.3	.2
C ^b _* H ^b N ^b H ^b C ^b _* H ^b ₂	4- 863	Not Reported						22 080.9	.5
(C ¹² D ₃) ₂ O ¹⁶	3- 592	4, 1, 3← 4, 0, 4	Excited					22 081.4	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 082.37	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	6, 5, 1← 6, 4, 2	Ground					22 082.56	.4
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 082.7	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		22 085.5	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		22 085.5	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Excited	5/2		5/2		22 086.4	.2
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					22 086.55	
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		22 086.65	.25
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						22 087.00	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 1← 2, 2, 0	Ground	7/2		7/2		22 088.7	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		22 088.7	.1
C ¹² H ₃ Si ²⁹ HF ¹⁹ ₂	3- 193	2, 1, 1← 1, 1, 0	Ground					22 089.10	
C ¹² HDCI ³⁵ Si ²⁸ H ₃	3- 236	8, 1, 7← 8, 0, 8	Ground					22 089.27	.2
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		22 089.42	.25
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	4, 1, 4← 3, 1, 3	Ground					22 091.50	.2
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					22 092.50	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		22 094.9	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					22 095.	5.
H ₂ C ^b _* O ¹⁶ C ^b _* H ^b ₂	4- 846	Not Reported	Excited					22 097.	5.
C ¹² _* D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ _*	4-1092	4, 3, 2← 4, 2, 3	Excited					22 097.3	.1
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	2, 1, 2← 1, 1, 1	Ground					22 097.89	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	2, 0, 2← 1, 0, 1	Ground		22 099.9	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Ground	5/2 5/2	22 100.75	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported			22 103.9	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 0, 3← 2, 0, 2	Ground	7/2 5/2	22 104.1	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 0, 3← 2, 0, 2	Ground	9/2 7/2	22 104.1	.2
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Excited	5/2 5/2	22 106.31	.20
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Excited	3/2 1/2	22 106.31	.20
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 2← 2, 1, 1	Ground	7/2 5/2	22 106.69	.25
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	7, 2, 5← 7, 1, 6	Ground	17/2 17/2	22 107.3	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	7, 2, 5← 7, 1, 6	Ground	11/2 11/2	22 107.3	.1
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	5, 1, 4← 4, 1, 3	Ground		22 107.4	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			22 108.	5.
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	7, 2, 5← 7, 1, 6	Ground	13/2 13/2	22 108.6	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	7, 2, 5← 7, 1, 6	Ground	15/2 15/2	22 108.6	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 0, 3← 2, 0, 2	Ground		22 108.79	.06
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Ground	9/2 7/2	22 109.5	.1
N ¹⁴ O ¹⁶ Br ⁸¹	4- 122	3, 1, 2← 2, 1, 1	Ground	5/2 3/2	22 110.25	.25
C ¹² H ₂ (C ¹² N ¹⁴)	4- 901	Not Reported	Ground		22 110.5	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported			22 112.3	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		22 112.46	.1
F ¹⁹ HC ¹³ O ¹⁶	4- 273	1, 0, 1← 0, 0, 0			22 112.5	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 2← 2, 2, 1	Ground		22 113.79	.06
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 2← 2, 2, 1	Ground	3/2 3/2	22 113.9	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 2← 2, 2, 1	Ground	5/2 3/2	22 113.9	.2
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	2, 1, 1← 1, 1, 0	Ground		22 116.80	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	2, 1, 1← 1, 1, 0	Ground		22 116.80	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 1← 2, 2, 0	Ground		22 117.13	.06
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 1← 2, 2, 0	Ground	5/2 3/2	22 117.2	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 1← 2, 2, 0	Ground	3/2 3/2	22 117.2	.2
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Excited	7/2 5/2	22 118.93	.07
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Excited	5/2 3/2	22 118.93	.07
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Excited	7/2 5/2	22 120.0	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Ground		22 120.00	.06
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 2← 2, 2, 1	Ground	3/2 1/2	22 124.0	.2
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported			22 125.	10.
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Excited	3/2 3/2	22 126.81	.20
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 1← 2, 2, 0	Ground	3/2 1/2	22 127.6	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	2, 0, 2← 1, 1, 1	Ground		22 128.05	.05
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 0, 3← 2, 0, 2	Ground	5/2 3/2	22 128.3	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 0, 3← 2, 0, 2	Ground	3/2 1/2	22 128.3	.2
N ¹⁴ H ₂ C ₂ ¹² H ₅	3- 631	Not Reported	Ground		22 130.04	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Ground	7/2 5/2	22 134.4	.1
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	3, 0, 3← 2, 0, 2	Ground		22 134.5	.1
N ¹⁵ H ₃	4-1772	8, 7← 8, 7	Ground		22 134.89	.02

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ F ₂ ¹⁹	4- 351	35,10,26←36, 9,27	Ground					22 135.44	.10
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	11, 8, 3←11, 8, 4	Ground					22 136.3	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 137.3	.1
C ¹² H ₂ F ₂ ¹⁹	4- 351	35,10,25←36, 9,28	Ground					22 137.35	.10
a-C ¹² H ₂ DC ¹² H ₂ C ¹² H ₃	3- 786	3, 1, 2← 3, 0, 3	Ground					22 137.98	.06
C ¹² *D:C ¹² D ¹² D:C ¹² DN ¹⁴ *H	4-1185	10,10, 0←10, 9, 1	Ground					22 139.2	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	11, 8, 3←11, 8, 4	Ground					22 139.7	
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	10, 5, 6←10, 3, 7	Ground					22 140.	5.
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	4, 1, 3← 4, 0, 4	Ground		5/2		5/2	22 140.38	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	4, 1, 3← 4, 0, 4	Ground		11/2		11/2	22 142.19	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 143.7	.1
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	4, 1, 3← 4, 0, 4	Ground					22 143.89	.05
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 7, 2← 7, 7, 1	Ground					22 144.	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 7, 1← 7, 7, 0	Ground					22 144.	
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	3, 1, 2← 3, 0, 3	Ground					22 144.0	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	4, 1, 3← 4, 0, 4	Ground		7/2		7/2	22 145.19	.05
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 1, 3← 2, 1, 2	Ground					22 146.00	
HN ¹⁴ O ₃ ¹⁶	3- 31	8, 6, 2← 8, 6, 3	Ground					22 147.00	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	4, 1, 3← 4, 0, 4	Ground		9/2		9/2	22 147.03	.05
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 1, 2← 2, 1, 1	Ground		3/2		1/2	22 147.69	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 3← 2, 1, 2	Ground		7/2		7/2	22 148.7	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						22 149.4	.2
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 1, 2← 2, 1, 1	Ground		9/2		7/2	22 149.41	.05
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						22 150.31	.05
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	6, 1, 6← 5, 1, 5	Ground					22 150.4	.1
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	2, 1, 1← 1, 1, 0	Ground					22 151.	1.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 151.0	.2
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						22 151.01	.05
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						22 153.7	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	22 154.5	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	22 154.5	.1
HC ¹² O ¹⁶ O ¹⁸ H	3- 77	5, 1, 5← 5, 1, 4	Ground					22 154.85	.1
F ¹⁹ HC ¹² O ¹⁶	4- 271	1, 0, 1← 0, 0, 0						22 156.8	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 3← 2, 1, 2	Ground		3/2		1/2	22 157.8	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 3← 2, 1, 2	Ground		9/2		7/2	22 157.8	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 3← 2, 1, 2	Ground		5/2		5/2	22 160.4	.1
HN ¹⁴ O ₃ ¹⁶	3- 31	3, 3, 1← 3, 1, 2	Ground					22 161.00	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 6, 2← 7, 6, 1	Ground					22 163.1	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 6, 3← 7, 6, 2	Ground					22 163.1	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 3← 2, 1, 2	Ground		3/2		3/2	22 164.0	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						22 164.9	.5
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	2, 1, 1← 1, 1, 0	Ground					22 167.26	.10
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						22 168.6	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 169.	5.
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		22 170.88	.05
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	2, 1, 1← 1, 1, 0	Ground					22 173.46	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 173.6	.1
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					22 174.1	.5
s-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 677	3, 1, 2← 2, 1, 1	Ground					22 174.5	.2
C ¹² H ₃ C ¹³ H ₂ Br ⁷⁹	3- 527	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		22 176.84	.05
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	4, 3, 2← 4, 1, 3	Ground					22 179.	
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁷	4- 672	10, 2, 8←10, 1, 9	Ground					22 181.0	1.
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	7, 6, 1← 7, 6, 2	Ground					22 181.1	.5
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	23, 2,21←23, 2,22	Ground					22 181.36	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	3, 1, 2← 2, 1, 1	Ground	7/2		7/2		22 181.8	.1
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁷	4- 672	10, 2, 8←10, 1, 9	Ground					22 183.1	1.
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 1, 3← 2, 1, 2	Ground					22 183.49	
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	2, 1, 1← 1, 1, 0	Ground					22 183.99	.10
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 1, 3← 2, 1, 2	Ground					22 184.00	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		22 184.2	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		22 184.2	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Ground	3/2		3/2		22 184.2	.1
HDS ⁸²	4-1758	7, 4, 4← 7, 4, 3	Ground					22 184.4	
C ₆ H ₅ C ¹² N ¹⁴	4-1291	8, 5, 4← 7, 5, 3	Ground					22 184.7	
C ₆ H ₅ C ¹² N ¹⁴	4-1291	8, 5, 3← 7, 5, 2	Ground					22 184.7	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 1← 2, 2, 0	Ground	5/2		5/2		22 187.6	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		22 187.6	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 187.7	.1
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	2, 1, 1← 1, 1, 0	Ground					22 189.69	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 191.	5.
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						22 195.3	.5
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	7, 2, 5← 7, 1, 6	Ground					22 198.83	.2
H ₂ C ¹³ :C ¹² HCl ³⁵	4- 769	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		22 199.21	.10
H ₂ C ¹³ :C ¹² HCl ³⁵	4- 769	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		22 199.21	.10
S ³² *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1161	3, 1, 3← 2, 1, 2	Ground					22 202.3	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 0, 3← 2, 0, 2	Ground	7/2		7/2		22 202.7	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 203.	5.
C ¹² H ₂ F ₂ ¹⁹	4- 351	3, 0, 3← 2, 1, 2	Ground					22 204.18	.10
H ₂ C ¹² :C ¹³ HCl ³⁵	4- 768	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		22 204.76	.10
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	14, 2,12←15, 1,15	Ground					22 205.4	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 205.5	.1
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	5, 1, ← 4, 1,	Ground					22 205.78	.5
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	22, 7,15←22, 7,16	Ground					22 206.	5.
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	2, 1, 1← 1, 1, 0	Ground					22 206.50	.10
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 207.7	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		22 208.0	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 2← 2, 2, 1	Ground	7/2	7/2			22 208.0	.1
(C ¹² D ₃) ₂ O ¹⁶	3- 592	4, 1, 3← 4, 0, 4	Excited					22 208.3	.2
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	13, 2, 11← 13, 2, 12	Ground					22 208.47	.2
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	6, 1, 5← 5, 2, 4	Ground					22 209.24	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			22 211.3	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 1← 2, 2, 0	Ground	7/2	7/2			22 211.3	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 212.	5.
(C ¹² D ₃) ₂ O ¹⁶	3- 592	4, 1, 3← 4, 0, 4	Excited					22 213.6	.2
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						22 215.	
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Ground	3/2	1/2			22 215.08	.10
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Ground	5/2	5/2			22 215.08	.10
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Excited	5/2	5/2			22 215.9	.2
(C ¹² D ₃) ₂ O ¹⁶	3- 592	4, 1, 3← 4, 0, 4	Ground					22 216.9	.5
H ₂ C ¹² :C ¹³ HCl ³⁵	4- 768	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			22 219.16	.10
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 4, 5← 7, 4, 4	Ground					22 220.	
S ³² O ₂ ¹⁶	4-1831	Not Reported						22 220.32	.1
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	11, 2, 9← 11, 1, 10	Ground					22 222.5	.1
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	11, 2, 9← 11, 1, 10	Ground					22 223.5	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 224.1	.1
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D	3- 506	2, 1, 2← 1, 1, 1	Ground					22 225.13	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Excited	9/2	7/2			22 226.4	.1
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	4, 2, 2← 4, 2, 3	Ground					22 226.4	.1
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	15, 2, 13← 16, 1, 16	Ground					22 227.	
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Ground	7/2	5/2			22 227.37	.03
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Ground	5/2	3/2			22 227.37	.03
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	3, 0, 3← 2, 0, 2	Ground					22 227.9	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported						22 228.	5.0
a-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 942	2, 1, 2← 1, 0, 1	Ground					22 228.22	.05
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	9, 9, 1← 9, 8, 2	Ground					22 229.1	
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	5, 1, 4← 5, 1, 5	Ground	5	5			22 229.78	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						22 229.8	.2
HDS ⁸⁰	4-1757	7, 4, 4← 7, 4, 3	Ground					22 230.0	
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			22 230.38	.25
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Ground	5/2	5/2			22 230.7	.1
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 4, 4← 7, 4, 3	Ground					22 231.	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 0, 3← 2, 0, 2	Ground	7/2	5/2			22 231.0	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			22 231.0	.2
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	5, 1, 4← 5, 1, 5	Ground	6	6			22 231.80	.1
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	5, 1, 4← 5, 1, 5	Ground	4	4			22 231.80	.1
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 2← 2, 1, 1	Ground	3/2	1/2			22 233.60	.25
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 2, 7← 7, 2, 6	Ground					22 233.8	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 234.	5.
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 663	Not Reported	Ground					22 234.1	1.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						22 234.17	.1
N ¹⁴ H ₃	4-1771	3, 1← 3, 1	Ground					22 234.53	.02

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						22 234.82	
H ₂ O ¹⁶	4-1711	6, 1, 6← 5, 2, 3	Ground					22 235.22	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						22 235.35	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						22 236.3	.3
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		22 236.45	.08
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 0, 3← 2, 0, 2	Ground					22 236.53	.1
F ¹⁹ H ₂ C ¹² H ₂ Cl ³⁵	3- 441	2, 1, 2← 1, 0, 1	Ground					22 236.7	.1
O ^b Q ^b O ^b	4-1847	Not Reported						22 237.	
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	4, 1, 4← 4, 1, 3	Ground					22 237.5	.3
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 2, 6← 9, 1, 9	Ground	9		10		22 238.36	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 2, 6← 9, 1, 9	Ground	7		8		22 238.36	.10
C ^b ₃ H ₂ N ^b H ^b C ^b ₃ H ₂	4- 863	Not Reported						22 238.8	.5
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 3, 6← 7, 3, 5	Ground					22 239.	
O ¹⁸ C ¹² S ³⁴	4- 532	2← 1	Ground					22 239.6	.2
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 2, 6← 9, 1, 9	Ground	8		9		22 240.09	.10
C ¹² D ₃ Si ³⁰ DF ₂ ¹⁹	3- 202	3, 1, 3← 2, 1, 2	Ground					22 240.68	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		22 240.8	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 2← 2, 2, 1	Ground					22 241.69	.04
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 2← 2, 2, 1	Ground	3/2		3/2		22 241.7	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 2← 2, 2, 1	Ground	5/2		3/2		22 241.7	.2
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	3, ← 2,	Excited					22 242.1	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 243.4	.1
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	3, ← 2,	Excited					22 244.4	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 1← 2, 2, 0	Ground					22 245.32	.04
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		22 245.5	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 1← 2, 2, 0	Ground	3/2		3/2		22 245.5	.1
C ^b ₃ H ₂ N ^b H ^b C ^b ₃ H ₂	4- 863	Not Reported						22 245.5	.5
C ¹² D ₃ Si ²⁹ DF ₂ ¹⁹	3- 201	3, 1, 3← 2, 1, 2	Ground					22 247.70	.2
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	3, 1, 2← 3, 0, 3	Ground					22 249.96	.10
C ^b H ₂ Cl ^b F ₂ ^b	4- 333	Not Reported						22 251.93	.1
C ^b H ₂ Cl ^b F ₂ ^b	4- 333	Not Reported						22 253.07	.1
2,4,6d ₃ -C ¹² H ₅ F ¹⁹	4-1284	5, 2, 3← 4, 2, 2	Ground					22 253.4	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Ground					22 253.42	.06
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	3, 0, 3← 2, 1, 2	Ground					22 254.27	.35
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		22 254.57	.25
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	3, 1, 3← 2, 1, 2	Ground					22 255.23	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Excited	7/2		5/2		22 255.9	.2
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		22 256.63	.05
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		22 258.07	.05
N ¹⁴ O ¹⁶ Br ⁷⁹	4- 121	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		22 258.34	.25
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 258.35	.04
C ¹² ₃ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ ₃ H	4-1181	8, 6, 2← 8, 6, 3	Ground					22 258.8	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		22 260.0	.2
C ¹² ₃ H ₂ N ¹⁴ HC ¹² ₃ H ₂	4- 861	3, 2, 1← 3, 1, 2	Ground					22 261.2	.5
C ¹² ₃ H ₂ N ¹⁴ HC ¹² ₃ H ₂	4- 861	3, 2, 1← 3, 1, 2	Ground					22 262.34	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 266.	5.
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	3, ← 2,	Excited					22 267.48	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					22 269.4	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		22 270.55	.1
C ¹² D ₃ C ¹³ O ¹⁶ F ¹⁹	3- 401	2, 1, 2← 1, 1, 1	Ground					22 270.72	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 271.57	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						22 273.4	.3
HC ¹² :C ¹² Cl ³⁷	4- 602	2← 1	Ground	3/2		1/2		22 273.90	.1
HC ¹² :C ¹² Cl ³⁷	4- 602	2← 1	Ground	5/2		5/2		22 275.10	.1
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	2, 1, 2← 1, 1, 1	Ground					22 275.12	.2
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		22 275.75	.05
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	8, 3, 5← 8, 2, 6	Ground					22 276.07	
HDS ⁷⁸	4-1756	7, 4, 4← 7, 4, 3	Ground					22 277.6	
K ³⁹ Cl ³⁷	1-	3← 2	Excited					22 278.0	3.0
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	3, ← 2,	Excited					22 278.47	
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					22 280.6	.1
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		22 280.80	.05
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	4, 3, 2← 4, 1, 3	Ground					22 281.6	
3d-C ₆ H ₅ F ¹⁹	4-1282	6, 1, 6← 5, 1, 5	Ground					22 286.5	.1
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 1, 3← 2, 1, 2	Ground	3/2		3/2		22 286.9	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						22 288.8	.5
HC ¹² :C ¹² Cl ³⁷	4- 602	2← 1	Ground	1/2		1/2		22 289.55	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 290.3	.1
HC ¹² :C ¹² Cl ³⁷	4- 602	2← 1	Ground	5/2		3/2		22 290.85	.1
HC ¹² :C ¹² Cl ³⁷	4- 602	2← 1	Ground	7/2		5/2		22 290.85	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	4, 3, 2← 4, 2, 3	Ground					22 291.15	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 293.8	.1
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	3, ← 2,	Ground					22 293.87	.1
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	3, ← 2,	Excited					22 296.97	
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	4, 0, 4← 3, 1, 3	Ground					22 297.6	.2
t-HDN ¹⁵ C ¹² HO ¹⁶	3- 159	1, 1, 1← 2, 0, 2	Ground					22 298.92	
C ¹² H ₃ C ¹³ H ₂ C ¹² H ₃	3- 783	2, 1, 1← 2, 0, 2	Ground					22 299.03	.06
C ¹² F ₃ ¹⁹ C ¹² :C ¹³ H	4- 873	4, ← 3,	Ground					22 301.0	.3
HC ¹² :C ¹² Cl ³⁷	4- 602	2← 1	Ground	3/2		3/2		22 302.10	.1
HDS ⁷⁷	4-1755	7, 4, 4← 7, 4, 3	Ground					22 302.3	
H ₂ C ^b *O ¹⁶ C ^b *H ₂ ^b	4- 846	Not Reported	Excited					22 303.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 304.	5.
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	11, 2, 9←11, 1,10	Ground	21/2		21/2		22 304.1	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	11, 2, 9←11, 1,10	Ground	23/2		23/2		22 304.1	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	11, 2, 9←11, 1,10	Ground	19/2		19/2		22 305.3	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	11, 2, 9←11, 1,10	Ground	25/2		25/2		22 305.3	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	6, 3, 3← 6, 2, 4	Ground					22 306.55	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -A	3- 511	2, 1, 2← 1, 1, 1	Ground					22 307.45	.2
HDO ¹⁶	4-1712	5, 3, 2← 5, 3, 3	Ground					22 307.67	.05
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 1, 3← 2, 1, 2	Ground					22 308.50	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₁	F' ₁	F		
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 309.	5.
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					22 311.8	1.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 313.	5.
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited		9/2		7/2	22 313.4	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						22 313.79	
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	5, 2, 4← 5, 1, 5	Ground					22 314.	1.
DN ₃ ¹⁴	4-1702	1, 0, 1← 0, 0, 0	Ground					22 316.1	
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	5, 2, 4← 5, 1, 5	Ground					22 318.	1.
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	6, 5, 2← 6, 4, 3	Ground					22 320.86	.05
C ₆ ¹² H ₅ F ¹⁹	4-1281	5, 3, 2← 4, 3, 1	Ground					22 322.1	.1
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	3, ← 2,	Excited					22 323.32	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						22 324.	3.
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	22 325.8	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 2← 2, 2, 1	Ground		5/2		5/2	22 325.8	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	7, 2, 5← 7, 1, 6	Ground					22 326.14	.2
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	27, 4,23←27, 4,24						22 326.42	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	6, 1, 5← 6, 1, 6	Ground					22 326.56	.3
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		5/2		5/2	22 326.9	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 327.0	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	3, 1, 2← 2, 1, 1	Ground		7/2		7/2	22 327.4	.2
HDS _e ⁷⁶	4-1759	7, 4, 4← 7, 4, 3	Ground					22 327.7	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 1← 2, 2, 0	Ground		5/2		5/2	22 329.6	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	22 329.6	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					22 329.8	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 331.	5.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 332.	5.
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		9/2		7/2	22 338.5	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	10, 2, 8←10, 1, 9	Ground					22 339.23	.2
H ₂ C ^b *O ¹⁶ C ^b *H ₂ ^b	4- 846	Not Reported	Excited					22 340.	5.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 1, 3← 2, 1, 2	Ground					22 340.04	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 3, 4← 7, 2, 5	Ground		11		11	22 344.40	.2
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	12	19/2	11	22 345.07	0.20
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 3, 4← 7, 2, 5	Ground		11		11	22 345.20	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 3, 4← 7, 2, 5	Ground		17		17	22 345.20	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 3, 4← 7, 2, 5	Ground		17		17	22 346.02	.2
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	6, 1, 5← 6, 1, 6	Ground					22 346.18	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 3, 4← 7, 2, 5	Ground		13		13	22 347.65	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	8, 7, 1← 8, 6, 2	Ground					22 347.90	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 3, 4← 7, 2, 5	Ground		15		15	22 348.40	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 3, 4← 7, 2, 5	Ground		13		13	22 348.40	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	8, 7, 1← 8, 6, 2	Ground					22 348.72	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 0, 3← 2, 0, 2	Ground		7/2		7/2	22 349.0	.2
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 1, 3← 2, 1, 2	Ground					22 349.17	.04
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 3, 4← 7, 2, 5	Ground		15		15	22 349.23	.2
H ₂ C ¹² :C ¹² C ¹³⁵ Cl ³⁷	4- 662	4, 1, 4← 3, 0, 3	Ground					22 351.3	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
a-C ¹² HD ₂ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 678	8, 2, 6← 8, 1, 7	Ground					22 351.7	.2
C ¹² H ₃ Si ^b HD ₂	3- 326	10, 1, 9←10, 1,10						22 353.73	.2
N ¹⁴ H ₃	4-1771	14,12←14,12	Ground					22 355.	.02
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 2← 1, 1, 1	Ground	5/2		3/2		22 355.06	.02
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						22 356.	3.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 356.5	.1
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						22 358.2	.2
a-C ¹² HD ₂ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 678	8, 3, 5← 8, 2, 6	Ground					22 358.8	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 359.	5.
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 2← 1, 1, 1	Ground	3/2		3/2		22 360.71	.02
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 2← 1, 1, 1	Ground	5/2		5/2		22 361.47	.02
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	7, 2, 5← 7, 1, 6	Ground					22 361.6	.3
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	7, 2, 5← 7, 1, 6	Ground					22 362.7	.3
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2		5/2		22 363.0	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	5/2		3/2		22 364.4	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						22 365.1	.5
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 1, 3← 2, 1, 2	Ground					22 365.79	.1
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		22 369.38	.02
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 369.95	
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 3, 3← 6, 2, 4	Ground	15/2		15/2		22 371.19	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 3, 3← 6, 2, 4	Ground	9/2		9/2		22 371.19	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 372.15	
HC ¹² O ¹⁸ O ¹⁶ H	3- 76	5, 1, 5← 5, 1, 4	Ground					22 372.49	.1
C ¹³ H C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 3, 3← 6, 2, 4	Ground	11/2		11/2		22 376.50	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	6, 3, 3← 6, 2, 4	Ground	13/2		13/2		22 376.50	.2
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	5, 2, 3← 4, 2, 2	Ground					22 378.0	.1
O ¹⁶ F ₂ ¹⁹	4-1611	19, 5,15←20, 4,16	Ground					22 378.53	.10
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 2← 1, 1, 1	Ground	1/2		1/2		22 380.11	.02
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 380.5	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 381.96	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 383.9	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						22 386.2	.3
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		22 386.74	.05
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		22 388.13	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 389.9	.1
2,4,6d ₃ -C ₆ ¹² H ₅ F ¹⁹	4-1284	12, 3, 9←12, 3,10	Ground					22 391.7	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 393.96	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						22 394.8	.3
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	19, 1,19←18, 2,16	Ground					22 395.57	.1
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	9, 1, 8← 9, 0, 9	Ground					22 399.13	.2
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	3, 0, 3← 2, 1, 2	Ground					22 402.03	.05
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	19, 1,19←18, 2,16	Ground					22 402.23	.1
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	3, 0, 3← 2, 1, 2	Ground					22 402.90	.05
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	3, 0, 3← 2, 1, 2	Ground					22 403.80	.05
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	10, 2, 8←10, 1, 9	Ground					22 404.11	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ^b ₂ H ^b ₂ N ^b H ^b C ^b ₂ H ^b ₂	4- 863	Not Reported						22 405.6	.5
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	2, 1, 2← 1, 0, 1	Ground					22 405.60	
C ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 3, 5← 7, 3, 4	Ground					22 406.	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground		3/2		3/2	22 406.1	
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	2, 1, 2← 1, 1, 1	Ground					22 406.41	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 2← 2, 1, 1	Ground		5/2		3/2	22 409.10	.05
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						22 410.	5.
K ³⁹ Cl ³⁷	1-	3← 2	Ground					22 410.3	1.5
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	21, 1,21←20, 2,18	Ground					22 413.	1.0
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						22 413.3	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	22 415.50	.05
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 2← 2, 2, 1	Ground		3/2		1/2	22 416.1	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 417.3	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 677	4, 0, 4← 3, 1, 3	Ground					22 417.94	.2
C ¹² H N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					22 418.	5.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 418.5	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	7, 5, 2← 7, 5, 3	Ground					22 418.8	
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	7, 3, 4← 6, 4, 3	Ground					22 419.13	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	21, 1,21←20, 2,18	Ground					22 419.25	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 0, 3← 2, 0, 2	Ground		3/2		3/2	22 420.5	.2
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	11, 2, 9←11, 2,10	Ground		10		10	22 421.45	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	11, 2, 9←11, 2,10	Ground		12		12	22 421.45	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	11, 2, 9←11, 2,10	Ground		11		11	22 422.37	.10
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	7, 6, 2← 7, 4, 3	Ground					22 423.1	
s-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 943	2, 1, 2← 1, 0, 1	Ground					22 425.74	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 427.	5.
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	9, 6, 3← 9, 6, 4	Ground					22 427.90	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 1← 2, 2, 0	Ground		3/2		1/2	22 429.6	.1
HC ¹³ O ¹⁶ O ¹⁶ H	3- 75	1, 0, 1← 0, 0, 0	Ground					22 432.6	.3
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	4, 0, 4← 3, 0, 3	Ground					22 435.80	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 2← 2, 1, 1	Ground		3/2		3/2	22 436.0	.2
C ^b *H ^b ₂ N ^b H ^b C ^b *H ^b ₂	4- 863	Not Reported						22 436.5	.5
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	7, 7, 0← 7, 6, 1	Ground					22 436.8	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 2, 3← 4, 1, 4	Ground		11/2		11/2	22 441.05	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 2, 3← 4, 1, 4	Ground		5/2		5/2	22 441.05	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ¹⁶	3- 181	3, 1, 3← 2, 1, 2	Ground					22 441.53	.1
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Excited		9/2		7/2	22 442.6	
C ^b H ^b ₂ Cl ^b F ^b	4- 333	Not Reported						22 443.0	1.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 3← 2, 1, 2	Ground		3/2		3/2	22 443.1	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 2, 3← 4, 1, 4	Ground		9/2		9/2	22 444.25	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 2, 3← 4, 1, 4	Ground		7/2		7/2	22 444.25	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 446.	5.
C ^b H ^b ₂ Cl ^b F ^b	4- 333	Not Reported						22 446.6	1.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 446.6	.1
3d-C ¹² H ₅ F ¹⁹	4-1282	5, 1, 4← 4, 1, 3	Ground					22 447.5	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 0, 3← 2, 0, 2	Ground	5/2		5/2		22 449.4	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 451.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		22 453.2	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		22 453.2	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	5/2		5/2		22 454.0	
a-C ¹² HD ₂ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 678	9, 3, 6← 9, 2, 7	Ground					22 454.2	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 455.1	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		22 456.0	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		22 456.0	.1
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	5, 0, ← 4, 0,	Ground					22 456.90	.5
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		22 457.7	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 458.	5.
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	8, 6, 2← 8, 6, 3	Ground					22 458.99	
4d-C ₆ H ₅ F ¹⁹	4-1283	6, 0, 6← 5, 0, 5	Ground					22 461.6	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 463.	5.
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						22 463.5	
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	5, 4, ← 4, 4,	Ground					22 463.68	.5
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	5, 3, ← 4, 3,	Ground					22 463.68	.5
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						22 464.77	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 465.	
C ₆ H ₅ F ¹⁹	4-1281	7, 2, 6← 7, 0, 7	Ground					22 465.2	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		22 466.4	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 467.	5.
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	9/2		7/2		22 468.1	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						22 468.6	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						22 470.5	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	9, 3, 6← 9, 2, 7	Ground	17/2		17/2		22 470.92	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	9, 3, 6← 9, 2, 7	Ground	19/2		19/2		22 470.92	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	9, 3, 6← 9, 2, 7	Ground	21/2		21/2		22 470.92	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	9, 3, 6← 9, 2, 7	Ground	15/2		15/2		22 470.92	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	1, 0, 1← 0, 0, 0						22 471.22	.1
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1← 1, 1, 0	Excited	5/2		3/2		22 471.6	.3
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2		5/2		22 471.7	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		22 473.4	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 473.4	.1
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	10, 4, 7←11, 3, 8	Ground					22 474.13	.01
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 474.4	.1
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		22 474.53	.02
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1← 1, 1, 0	Excited	3/2		3/2		22 476.2	.3
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1← 1, 1, 0	Excited	5/2		5/2		22 476.2	.3
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	7, 1, 6← 7, 0, 7	Ground					22 477.10	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	3, 2, 2← 3, 1, 3	Ground					22 477.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 477.9	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 478.	5.
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 1, 3← 2, 1, 2	Ground					22 480.64	.04

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₂	F ₁	F		
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 772	5, 1, 5← 4, 1, 4	Ground					22 480.92	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 481.4	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 2← 2, 1, 1	Ground		9/2		7/2	22 481.5	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 482.4	.1
S ³² O ₂ ¹⁶	4-1831	24, 4, 20←23, 5, 19	Ground					22 482.51	.1
t-HDC ¹² :C ¹² DCl ³⁵	4- 761	2, 1, 1← 1, 1, 0	Ground					22 483.25	
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1← 1, 1, 0	Excited		3/2		1/2	22 483.7	.3
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1← 1, 1, 0	Excited		7/2		5/2	22 483.7	.3
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	22 485.7	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 2← 2, 2, 1	Ground		7/2		7/2	22 485.7	.1
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 0, 2← 1, 0, 1	Ground		7/2		5/2	22 485.81	.02
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 0, 2← 1, 0, 1	Ground		5/2		3/2	22 485.81	.02
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						22 486.1	.5
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 489.	5.
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						22 490.	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 2← 2, 1, 1	Excited		7/2		5/2	22 490.9	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	8, 3, 5← 8, 2, 6	Ground		13/2		13/2	22 491.47	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	8, 3, 5← 8, 2, 6	Ground		19/2		19/2	22 491.47	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 2← 2, 1, 1	Ground					22 491.90	.06
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	8, 3, 5← 8, 2, 6	Ground		17/2		17/2	22 492.59	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	8, 3, 5← 8, 2, 6	Ground		15/2		15/2	22 492.59	.2
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 0, 2← 1, 0, 1	Ground		3/2		3/2	22 493.89	.02
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	8, 3, 5← 8, 2, 6	Ground		13/2		13/2	22 493.90	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	8, 3, 5← 8, 2, 6	Ground		19/2		19/2	22 493.90	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	22 494.2	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	22 494.2	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 3← 2, 1, 2	Ground		9/2		7/2	22 494.35	.05
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	8, 3, 5← 8, 2, 6	Ground		15/2		15/2	22 495.00	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	8, 3, 5← 8, 2, 6	Ground		17/2		17/2	22 495.00	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 3← 2, 1, 2	Ground		3/2		1/2	22 496.1	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	10, 8, 2←10, 7, 3	Ground					22 496.34	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		7/2		5/2	22 497.0	
t-HDC ¹² :C ¹² DCl ³⁵	4- 761	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	22 497.05	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	10, 8, 2←10, 7, 3	Ground					22 497.12	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	3, 2, 2← 3, 0, 3	Ground					22 497.9	
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	2, 1, 2← 1, 1, 1	Ground					22 498.71	.10
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		5/2		3/2	22 498.8	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 0, 3← 2, 0, 2	Ground					22 498.94	.04
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	22 499.25	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 1← 2, 2, 0	Ground		7/2		7/2	22 499.25	.1
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						22 500.	5.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 3← 2, 1, 2	Ground					22 504.70	.05
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	9, 6, 3← 9, 6, 4	Ground					22 505.64	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	22 505.85	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 506.0	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	9, 6, 3← 9, 6, 4	Ground					22 506.26	.2
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -A	3- 515	2, 1, 2← 1, 1, 1	Ground					22 506.30	.2
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	9, 6, 3← 9, 6, 4	Ground					22 506.98	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 507.42	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 507.7	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	4, 0, 4← 3, 0, 3	Ground					22 508.38	.2
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	4, 1, 3← 4, 0, 4	Ground					22 508.77	.35
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	6, 5, 1← 6, 5, 2	Ground					22 509.5	.5
t-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 554	3, 0, 3← 2, 1, 2	Ground					22 509.6	.1
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	7, 1, 6← 7, 0, 7	Ground					22 511.60	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	4, 2, 2← 4, 2, 3	Ground					22 512.80	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 2← 2, 2, 1	Ground					22 513.63	.04
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	22 513.7	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	22 513.7	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					22 514.20	.2
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	9, 1, 8← 9, 0, 9	Ground					22 514.93	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						22 516.50	
3d-C ₆ H ₅ F ¹⁹	4-1282	6, 0, 6← 5, 0, 5	Ground					22 517.0	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	22 518.0	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	4, 2, 2← 4, 2, 3	Ground					22 518.13	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	22 518.2	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	22 518.2	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	22 520.0	.1
C ¹³ HC ¹³⁵ F ₂ ¹⁹	4- 253	6, 3, 4← 6, 2, 4	Ground					22 525.15	.10
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	4, 2, 2← 4, 2, 3	Ground					22 525.39	.2
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	4, 2, 2← 4, 2, 3	Ground					22 525.92	.2
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	4, 2, 2← 4, 2, 3	Ground					22 526.15	.2
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					22 526.9	1.5
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	16, 2,14←17, 1,17	Ground					22 527.	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 1← 2, 2, 0	Ground					22 527.26	.04
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	22 527.4	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 1← 2, 2, 0	Ground		3/2		3/2	22 527.4	.1
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	4, 2, 2← 4, 2, 3	Ground					22 527.51	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	6, 4, 2← 6, 4, 3	Ground					22 527.6	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 527.93	.04
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 528.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 528.21	.04
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 2← 2, 2, 1	Ground		3/2		1/2	22 530.3	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 532.	5.
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	3, 1, 2← 3, 0, 3	Excited					22 533.09	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 536.	5.
N ¹⁵ H ₃	4-1772	9, 8← 9, 8	Ground					22 536.26	.02
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	2, 1, 2← 1, 1, 1	Ground					22 537.9	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 0, 3← 2, 0, 2	Ground		3/2		3/2	22 538.2	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	10,10, 1←10, 8, 2	Ground					22 540.27	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 0, 3← 2, 0, 2	Ground					22 541.90	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						22 542.	3.
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		22 544.4	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	7, 3, 4← 7, 2, 5	Ground					22 544.60	.1
C ¹² HCl ³⁵ F ¹⁹ ₂	4- 251	6, 3, 4← 6, 2, 4	Ground	9/2		9/2		22 545.9	.05
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 2, 2← 2, 2, 1	Ground					22 546.07	
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	2, 1, 2← 1, 0, 1	Ground	7/2		5/2		22 546.22	.05
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	7, 3, 4← 7, 2, 5	Ground					22 546.25	.2
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	5, 3, 2← 5, 3, 3	Ground					22 547.1	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	7, 3, 4← 7, 2, 5	Ground					22 547.90	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 2, 1← 2, 2, 0	Ground					22 548.08	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 2, 2← 2, 2, 1	Ground					22 548.10	.1
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	6, 2, 5← 6, 2, 4	Ground					22 549.0	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 2, 1← 2, 2, 0	Ground					22 550.06	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					22 550.3	.5
C ¹² HCl ³⁵ F ¹⁹ ₂	4- 251	6, 3, 4← 6, 2, 4	Ground					22 550.41	.03
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	3, 1, 2← 2, 1, 1	Ground	7/2		7/2		22 551.7	.1
C ¹² HCl ³⁵ F ¹⁹ ₂	4- 251	6, 3, 4← 6, 2, 4	Ground	11/2		11/2		22 552.9	.05
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground	3/2		3/2		22 553.6	
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	7, 0, 7← 6, 1, 6	Ground					22 554.00	.2
C ¹² HCl ³⁵ F ¹⁹ ₂	4- 251	6, 3, 4← 6, 2, 4	Ground	13/2		13/2		22 554.5	.05
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					22 556.28	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Ground	3/2		3/2		22 556.8	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 3← 2, 1, 2	Ground	3/2		3/2		22 558.8	.1
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						22 560.	5.
C ¹² H ₅ Cl ³⁵	4-1271	8, 6, 3← 7, 6, 2	Ground					22 560.	5.0
C ¹² H ₅ Cl ³⁵	4-1271	8, 6, 2← 7, 6, 1	Ground					22 560.	5.0
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					22 560.2	.1
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		22 561.0	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	10, 2, 8←10, 1, 9	Ground	17/2		17/2		22 561.01	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	10, 2, 8←10, 1, 9	Ground	23/2		23/2		22 561.63	.15
C ¹² HCl ³⁷ :C ¹² F ¹⁹ ₂	4- 612	7, 0, 7← 6, 1, 6	Ground					22 562.0	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		22 562.3	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 0, 3← 2, 0, 2	Ground	3/2		1/2		22 562.3	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 1, 2← 3, 0, 3	Ground					22 562.48	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	10, 2, 8←10, 1, 9	Ground	17/2		17/2		22 563.55	.15
N ¹⁴ H ₂ C ¹² H ₅	3- 631	Not Reported	Ground					22 564.05	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	10, 2, 8←10, 1, 9	Ground	23/2		23/2		22 564.33	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	10, 2, 8←10, 1, 9	Ground	19/2		19/2		22 564.33	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						22 564.64	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	10, 2, 8←10, 1, 9	Ground	21/2		21/2		22 564.77	.15
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		22 565.9	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		22 565.9	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	10, 2, 8←10, 1, 9	Ground	19/2		19/2		22 566.91	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
Cs ¹³³ I ¹²⁷	1-	16 $\leftarrow$ 15	Excited					22 567.02	0.10
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	10, 2, 8 $\leftarrow$ 10, 1, 9	Ground	21/2		21/2		22 567.38	.15
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	12, 5, 7 $\leftarrow$ 12, 5, 8	Ground					22 568.	5.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 3 $\leftarrow$ 2, 1, 2	Ground		7/2		7/2	22 571.6	.2
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	8, 1, 8 $\leftarrow$ 7, 1, 7	Ground					22 572.56	.05
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 0, 3 $\leftarrow$ 2, 0, 2	Ground		5/2		5/2	22 572.6	.2
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	7, 2, 5 $\leftarrow$ 7, 1, 6	Ground					22 573.05	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground		7/2		5/2	22 573.5	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	7, 2, 5 $\leftarrow$ 7, 1, 6	Ground					22 574.10	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 577.4	.2
C ₆ H ₅ Cl ³⁵	4-1271	8, 5, 3 $\leftarrow$ 7, 5, 2	Ground					22 578.	5.0
C ₆ H ₅ Cl ³⁵	4-1271	8, 5, 4 $\leftarrow$ 7, 5, 3	Ground					22 578.	5.0
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					22 578.6	.5
C ¹² H ₂ F ₂ ¹⁹	4- 351	Not Reported	Ground					22 579.40	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 580.	
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground		5/2		3/2	22 580.47	.03
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Excited		9/2		7/2	22 580.6	
HDO ¹⁶	4-1712	11, 5, 6 $\leftarrow$ 11, 5, 7	Ground					22 581.1	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 581.49	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						22 583.	3.
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground		7/2		5/2	22 583.3	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground		5/2		5/2	22 583.3	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground		5/2		3/2	22 583.8	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 585.	5.
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground		5/2		5/2	22 585.47	.13
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground		3/2		3/2	22 585.47	.13
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2 $\leftarrow$ 2, 1, 1	Excited		5/2		5/2	22 587.3	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground		9/2		7/2	22 587.8	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 588.42	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 0, 3 $\leftarrow$ 2, 0, 2	Ground		7/2		7/2	22 592.0	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 2, 1 $\leftarrow$ 2, 2, 0	Ground		7/2		5/2	22 592.1	.1
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	5, 4, 2 $\leftarrow$ 5, 3, 3	Ground					22 592.6	
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	6, 1, 5 $\leftarrow$ 6, 1, 6	Ground					22 592.7	.1
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground		7/2		5/2	22 592.95	.07
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground		3/2		1/2	22 592.95	.07
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		5/2		5/2	22 593.5	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2 $\leftarrow$ 2, 1, 1	Excited		9/2		7/2	22 596.55	.05
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					22 597.	1.5
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 1 $\leftarrow$ 2, 2, 0	Ground		7/2		5/2	22 597.0	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 2, 1 $\leftarrow$ 2, 2, 0	Ground		5/2		5/2	22 597.0	.1
C ¹² *H:C ¹² HC ¹² H:C ¹² NN ¹⁴ *H	4-1181	2, 1, 2 $\leftarrow$ 1, 1, 1	Ground					22 597.5	
C ¹² *H:C ¹² HC ¹² H:C ¹² NN ¹⁴ *H	4-1181	5, 3, 2 $\leftarrow$ 5, 3, 3	Ground					22 597.5	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground		3/2		1/2	22 597.6	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 598.5	.1
Si ²⁸ D ₃ N ¹⁴ C ¹² S ³²	4- 492	8, $\leftarrow$ 7,	Ground					22 598.75	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
N ¹⁴ O ¹⁶ Cl ³⁵	4-1451	2, 1, 1← 1, 1, 0	Ground		1/2	1/2		22 601.72	.14
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 602.05	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Ground		5/2	5/2		22 602.16	.05
C ¹² ₃ H ₂ C ¹² H ₂ C ¹² ₃ HCl ³⁵	4-1081	3, 2, 1← 2, 2, 0	Ground		5/2	3/2		22 602.4	.1
N ¹⁴ H ₂ C ¹² H ₅	3- 631	Not Reported	Ground					22 603.51	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		9/2	7/2		22 605.45	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 3← 2, 1, 2	Ground		5/2	5/2		22 605.8	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 606.4	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 3← 3, 1, 2	Ground		11/2	9/2		22 606.54	.15
C ¹² ₃ H ₂ C ¹² H ₂ C ¹² ₃ HCl ³⁵	4-1081	3, 2, 1← 2, 2, 0	Ground		9/2	7/2		22 606.6	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						22 607.45	.05
C ¹² H ₃ C ¹² ₃ HO ¹⁶ C ¹² ₃ H ₂	3- 761	23,11, ←22,12,	Ground					22 607.49	.1
C ¹² H ₃ C ¹² ₃ HO ¹⁶ C ¹² ₃ H ₂	3- 761	23,11, ←22,12,	Ground					22 607.74	.1
C ¹² H ₃ C ¹² ₃ HO ¹⁶ C ¹² ₃ H ₂	3- 761	23,11, ←22,12,	Ground					22 608.43	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Ground		3/2	1/2		22 610.8	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Ground		9/2	7/2		22 611.8	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 611.8	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground		7/2	7/2		22 613.1	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground		9/2	7/2		22 613.1	.1
C ¹² DHDC ¹² HDF ¹⁹	3- 561	5, 1, 4← 4, 2, 3	Ground					22 613.8	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 3← 3, 1, 2	Ground		5/2	3/2		22 614.59	.15
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 1, 3← 2, 1, 2	Ground					22 615.89	.04
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						22 616.	3.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 616.	.1
C ¹² ₃ H ₂ C ¹² H ₂ C ¹² ₃ HCl ³⁵	4-1081	3, 2, 1← 2, 2, 0	Ground		3/2	1/2		22 616.5	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 3← 3, 1, 2	Ground		9/2	7/2		22 616.98	.15
C ¹² ₃ H:C ¹² HO ¹⁶ C ¹² H:C ¹² ₃ D	4-1155	2, 0, 2← 1, 0, 1	Ground					22 617.5	
s-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 677	8, 2, 6← 8, 1, 7	Ground					22 617.57	.2
N ¹⁴ H ₂ C ¹² H ₅	3- 631	Not Reported	Ground					22 618.89	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 620.	
C ¹² D ₃ Si ²⁹ DF ₂ ¹⁹	3- 201	3, 0, 3← 2, 0, 2	Ground					22 620.04	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 620.1	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 3← 2, 1, 2	Ground		9/2	7/2		22 620.2	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 3← 3, 1, 2	Ground		7/2	5/2		22 623.21	.15
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Ground					22 624.10	.04
N ¹⁵ H ₃	4-1772	1, 1← 1, 1	Ground					22 624.96	.02
N ¹⁴ H ₂ C ¹² H ₅	3- 631	Not Reported	Ground					22 625.17	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Excited		7/2	5/2		22 625.9	.2
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 0, 3← 2, 0, 2	Ground		7/2	5/2		22 626.5	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 0, 3← 2, 0, 2	Ground		9/2	7/2		22 626.5	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 1← 2, 2, 0	Ground		9/2	7/2		22 627.7	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 1← 2, 2, 0	Ground		7/2	7/2		22 627.7	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	3, 0, 3← 2, 0, 2	Ground					22 627.94	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 628.	5.
C ₆ H ₅ Cl ³⁵	4-1271	8, 4, 5← 7, 4, 4	Ground					22 628.	5.0
C ₆ H ₅ Cl ³⁵	4-1271	8, 4, 4← 7, 4, 3	Ground					22 628.	5.0
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2			5/2	22 629.6	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					22 631.	1.5
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	5/2			3/2	22 631.1	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 0, 3← 2, 0, 2	Ground					22 631.95	.04
Cs ¹³³ I ¹²⁷	1-	16←15	Ground					22 632.26	0.10
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 3← 2, 1, 2	Ground					22 632.77	.08
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 635.	5.
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	21,15, 6←21,15, 7	Ground					22 635.18	.1
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	7, 6, 2← 7, 4, 3	Ground					22 635.8	
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground					22 635.94	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	21,15, 6←21,15, 7	Ground					22 636.78	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 637.08	
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	3, 1, 2← 3, 1, 3	Ground					22 637.2	.1
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	7, 6, 2← 7, 4, 3	Ground					22 638.0	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	4, 2, 2← 4, 2, 3	Ground					22 638.6	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Ground	7/2			5/2	22 640.9	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 641.0	.1
4d-C ₆ H ₅ C ¹² N ¹⁴	4-1296	9, 0, 9← 8, 0, 8	Ground					22 641.0	.2
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground					22 641.95	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					22 642.3	
C ₆ H ₅ Cl ³⁵	4-1271	8, 3, 6← 7, 3, 5	Ground					22 644.0	
K ³⁹ Cl ³⁵	1-	3← 2	Excited					22 644.0	2.0
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 2← 2, 2, 1	Ground					22 646.88	.04
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 2← 2, 2, 1	Ground	5/2			3/2	22 647.1	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 2← 2, 2, 1	Ground	3/2			3/2	22 647.1	.1
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	6, 6, 1← 6, 5, 2	Ground					22 647.1	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 648.4	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 3← 2, 1, 2	Ground	7/2			5/2	22 648.6	.2
N ¹⁵ H ₃	4-1772	2, 2← 2, 2	Ground					22 649.85	.02
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						22 650.	10.
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	11, 4, 7←11, 3, 8	Ground					22 650.6	.5
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 651.	5.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 651.0	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 3← 2, 1, 2	Ground	5/2			3/2	22 651.1	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 652.9	.1
N ¹⁴ H ₃	4-1771	5, 4← 5, 4	Ground					22 653.00	.02
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 508	2, 1, 2← 1, 1, 1	Ground					22 653.03	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	4, 3, 2← 4, 2, 3	Ground					22 654.8	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 0, 3← 2, 0, 2	Ground	3/2			1/2	22 655.2	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		22 655.2	.1
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	3, 1, 2← 3, 1, 3	Ground					22 657.5	
C ¹² HD ₂ Cl ³⁷	4- 432	1, 0, 1← 0, 0, 0	Ground					22 659.29	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 1← 2, 2, 0	Ground					22 661.15	.04
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 1← 2, 2, 0	Ground	3/2		3/2		22 661.3	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		22 661.3	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					22 661.4	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 663.	.1
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	12, 3, 9←12, 3,10	Ground					22 663.2	.1
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	2, 1, 2← 1, 0, 1	Ground					22 663.50	
N ¹⁴ H ₂ C ₂ ¹² H ₅	3- 631	Not Reported	Ground					22 668.35	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	3, 2, 2← 3, 0, 3	Ground					22 670.9	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2		3/2		22 671.5	
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	5, 5, 1← 5, 4, 1	Ground					22 671.9	.5
C ¹³ H ₃ O ¹⁶ H	3- 213	29, 2, ←29, 1,	Ground					22 672.90	.1
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	7, 1, 7← 6, 2, 4	Ground					22 673.8	.1
C ¹² HD ₂ Cl ³⁷	4- 432	1, 0, 1← 0, 0, 0	Ground					22 673.80	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		22 676.4	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	4, 3, 2← 4, 1, 3	Ground					22 679.6	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						22 680.	10.
C ¹² H ₃ S ³² C ¹² N ¹⁴	3- 431	4, , ← 3, ,	Excited					22 680.	10.
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	6, 2, 4← 6, 1, 5	Ground	15/2		15/2		22 680.8	.1
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	6, 2, 4← 6, 1, 5	Ground	9/2		9/2		22 680.8	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Excited	7/2		7/2		22 680.9	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						22 681.	3.
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	7, 1, 6← 7, 0, 7	Ground	11/2		11/2		22 681.16	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	7, 1, 6← 7, 0, 7	Ground	17/2		17/2		22 682.47	.2
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	6, 2, 4← 6, 1, 5	Ground	13/2		13/2		22 682.6	.1
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	6, 2, 4← 6, 1, 5	Ground	11/2		11/2		22 682.6	.1
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		22 683.0	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	7, 1, 6← 7, 0, 7	Ground					22 684.78	.2
C ¹² HD ₂ Cl ³⁷	4- 432	1, 0, 1← 0, 0, 0	Ground					22 685.60	
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	5, 1, 4← 5, 0, 5	Ground					22 687.	5.
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		22 687.29	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	14,14, 1←14,13, 1						22 687.47	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 688.	5.
N ¹⁴ H ₃	4-1771	4, 3← 4, 3	Ground					22 688.29	.02
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						22 688.4	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						22 688.5	.1
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	7, 1, 6← 7, 0, 7	Ground	15/2		15/2		22 688.51	.2
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	6, 4, 2← 6, 3, 3	Ground					22 689.5	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 4← 3, 1, 3	Ground	7/2		5/2		22 690.03	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	5, 4, 2← 5, 2, 3	Ground					22 694.1	
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					22 695.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	3, 1, 2← 2, 1, 1	Ground		7/2	7/2		22 695.9	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	2, 1, 2← 1, 0, 1	Ground					22 696.3	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 701.	5.
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	4, 1, 4← 3, 0, 3	Ground					22 701.2	.5
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						22 703.0	.2
C ₆ H ₅ C ¹² N ¹⁵	4-1292	9, 0, 9← 8, 0, 8	Ground					22 705.9	.2
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		22 708.8	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		22 709.40	
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	7, 1, 6← 7, 0, 7	Ground					22 709.58	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					22 710.	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		22 712.8	.2
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	2, 1, 2← 1, 1, 1	Ground					22 714.55	.10
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	5, 1, ← 4, 1,	Ground					22 714.99	.5
HC ¹² :C ¹² Cl ₂ ³⁵	4- 601	2← 1	Ground	3/2		1/2		22 717.07	.1
HC ¹² :C ¹² Cl ₂ ³⁵	4- 601	2← 1	Ground	5/2		5/2		22 718.80	.1
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		22 719.0	
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	4, 1, 3← 4, 0, 4	Ground					22 719.46	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 719.7	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	17, 4, ←16, 5,	Ground					22 722.62	.04
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	10, 2, 8←10, 1, 9	Ground	17/2		17/2		22 722.86	.15
C ¹² H ₃ N ¹⁴ H ₂	3- 261	17, 4, ←16, 5,	Ground					22 723.	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	6, 5, 2← 6, 3, 3	Ground					22 723.0	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	10, 2, 8←10, 1, 9	Ground	23/2		23/2		22 723.66	.15
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	2, 0, 2← 1, 0, 1	Ground					22 724.1	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						22 725.	3.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	10, 2, 8←10, 1, 9	Ground	17/2		17/2		22 725.54	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	10, 2, 8←10, 1, 9	Ground	23/2		23/2		22 726.34	.15
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	9, 3, 6← 9, 2, 7	Ground					22 726.47	
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ₂ ³⁵	3- 365	8, 3, 5← 8, 2, 6	Ground					22 726.75	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					22 727.2	1.5
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	10, 2, 8←10, 1, 9	Ground	19/2		19/2		22 727.32	.15
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ₂ ³⁵	3- 365	8, 3, 5← 8, 2, 6	Ground					22 727.54	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	10, 2, 8←10, 1, 9	Ground	21/2		21/2		22 727.85	.15
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ₂ ³⁵	3- 365	8, 3, 5← 8, 2, 6	Ground					22 728.32	.1
3d-C ₆ H ₅ C ¹² N ¹⁴	4-1295	9, 0, 9← 8, 0, 8	Ground					22 729.0	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	10, 2, 8←10, 1, 9	Ground	19/2		19/2		22 729.99	.15
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	4, 1, 3← 4, 0, 4	Ground					22 730.32	.2
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		22 730.4	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		22 730.4	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	10, 2, 8←10, 1, 9	Ground	21/2		21/2		22 730.54	.15
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						22 730.80	.1
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	3, 0, 3← 2, 0, 2	Ground					22 730.9	.05
N ¹⁴ H ₃	4-1771	6, 5← 6, 5	Ground					22 732.43	.02
HC ¹² :C ¹² Cl ₂ ³⁵	4- 601	2← 1	Ground	3/2		5/2		22 732.90	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	9/2		7/2		22 733.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
S ³² O ₂ ⁶	4-1831	Not Reported						22 733.83	.1
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	2, 0, 2← 1, 0, 1	Ground					22 733.95	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 4← 3, 1, 3	Ground		3/2		1/2	22 734.40	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 735.	5.
HC ¹² :C ¹² Cl ³⁵	4- 601	2← 1	Ground		1/2		1/2	22 737.00	.1
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	7, 7, 1← 7, 6, 2	Ground					22 738.3	
HC ¹² :C ¹² Cl ³⁵	4- 601	2← 1	Ground		7/2		5/2	22 738.68	.1
HC ¹² :C ¹² Cl ³⁵	4- 601	2← 1	Ground		5/2		3/2	22 738.68	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						22 738.93	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	6, 2, 4← 6, 1, 5	Ground					22 739.83	.2
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	4, 4, 1← 4, 3, 2	Ground					22 740.19	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 4← 3, 1, 3	Ground		11/2		9/2	22 740.73	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	22 741.8	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	10, 7, 3←10, 7, 4	Ground					22 743.1	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 0, 3← 2, 0, 2	Ground		7/2		7/2	22 743.2	.1
H ₂ C ¹³ :C ¹² HCl ³⁵	4- 769	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	22 744.21	.10
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	22 744.5	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 2, 1← 2, 2, 0	Ground		5/2		5/2	22 744.5	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						22 744.7	.3
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	22 745.7	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 1, 3← 2, 1, 2	Ground					22 745.87	.04
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 747.	5.
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	3, 1, 2← 2, 1, 1	Ground					22 748.5	
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ E	3- 514	4, 1, 3← 4, 0, 4	Ground					22 749.66	.2
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground					22 751.86	.2
Rb ⁸⁵ Br ⁷⁹	1-	8← 7	Ground					22 752.29	0.10
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					22 752.7	1.
HC ¹² :C ¹² Cl ³⁵	4- 601	2← 1	Ground		3/2		3/2	22 752.95	.1
O ¹⁸ C ¹² S ³²	4- 531	2← 1	Excited					22 754.6	.2
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						22 756.43	
H ₂ C ¹³ :C ¹² HCl ³⁵	4- 769	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	22 758.33	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 759.22	.04
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 4← 3, 1, 3	Ground		13/2		11/2	22 759.50	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 759.63	.1
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -A	3- 513	4, 1, 3← 4, 0, 4	Ground					22 760.03	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	22 760.3	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	22 762.0	
O ¹⁸ C ¹³ S ³²	4- 533	2← 1	Ground					22 763.8	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		5/2		3/2	22 764.0	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 0, 3← 2, 0, 2	Ground					22 764.69	.08
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	12, 9, 3←12, 9, 4	Ground					22 765.11	.1
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	5, 1, 4← 5, 1, 5	Ground					22 765.2	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 765.62	.1
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	5, 1, 4← 5, 1, 5	Ground					22 765.84	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						22 766.98	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	7, 6, 2← 7, 4, 3	Ground					22 769.1	
C ¹² H ₃ :C ¹² H ₂ C ¹² H ₃	3- 781	2, 1, 1← 2, 0, 2	Ground					22 769.74	.03
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 2, 2← 2, 2, 1	Ground					22 770.11	.06
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 2, 2← 2, 2, 1	Ground	5/2			3/2	22 770.4	
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	8, 6, 2← 8, 6, 3	Ground					22 770.4	.1
Tl ²⁰⁵ Br ⁸¹	1-	9← 8	Excited					22 771.22	0.20
HC ¹² :C ¹² Cl ³⁵	4- 601	2← 1	Ground	1/2			3/2	22 772.82	.1
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 2, 1← 2, 2, 0	Ground					22 774.41	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	5/2			3/2	22 774.7	
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	11, 6, 6←11, 4, 7	Ground					22 775.	5.
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	6, 1, 5← 6, 1, 6	Ground					22 776.2	.1
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					22 779.	5.
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						22 779.30	
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	5, 1, 4← 5, 0, 5	Ground					22 782.10	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	8, 6, 2← 8, 5, 3	Ground					22 782.7	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					22 782.8	1.
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground	5/2			3/2	22 783.1	
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	5, 1, 4← 5, 0, 5	Ground					22 784.10	.2
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 1, 2← 2, 1, 1	Ground					22 784.40	
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	12, 9, 3←12, 8, 4	Ground					22 784.7	
K ³⁹ Cl ³⁵	1-	3← 2	Excited					22 785.2	1.0
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 1, 2← 1, 0, 1	Ground	5/2			3/2	22 785.82	.05
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	5, 1, 4← 5, 0, 5	Ground					22 786.10	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 786.4	.1
(C ¹² H ₃) ₃ C ¹² N ¹⁴ C ¹³	3-1031	4, ← 3,	Ground					22 786.5	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 3← 3, 1, 2	Ground	11/2			9/2	22 786.79	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 3← 3, 1, 2	Ground	11/2			9/2	22 787.47	.15
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	11, 5, 6←11, 4, 8	Ground					22 788.3	.3
C ¹³ H ₃ C ¹² H ₂ C ¹² H ₃	3- 782	2, 1, 1← 2, 0, 2	Ground					22 788.80	.06
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	3, 2, 2← 2, 2, 1	Ground	3/2			1/2	22 789.2	
N ¹⁵ H ₃	4-1772	3, 3← 3, 3	Ground					22 789.41	.02
N ¹⁴ H ₂ C ¹² H ₅	3- 631	Not Reported	Ground					22 789.47	.2
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	5, 4, 1← 5, 4, 2	Ground					22 792.3	.5
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 0, 2← 1, 1, 1	Ground					22 793.22	.04
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	3/2			1/2	22 793.5	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Ground	3/2			3/2	22 793.6	
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 0, 2← 1, 1, 1	Ground					22 794.24	.04
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 3← 3, 1, 2	Ground	5/2			3/2	22 794.65	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 3← 3, 1, 2	Ground	9/2			7/2	22 797.44	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 3← 3, 1, 2	Ground	9/2			7/2	22 797.96	.15
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 2, 2← 3, 1, 3	Ground					22 800.0	.2
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 0, 2← 1, 1, 1	Ground					22 800.37	.04
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	6, 4, 2← 6, 3, 3	Ground					22 800.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	3, 0, 3← 2, 0, 2	Ground		22 802.8	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 3← 3, 1, 2	Ground	7/2 5/2	22 803.90	.15
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 2, 2← 3, 1, 3	Ground		22 804.3	.2
C ¹² D ₂ Cl ³⁵	4- 346	5, 1, 4← 5, 0, 5	Ground		22 805.	5.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 3← 3, 1, 2	Ground	7/2 5/2	22 805.15	.15
H ₂ C ¹² :C ¹³ HCl ³⁵	4- 768	2, 0, 2← 1, 0, 1	Ground	7/2 5/2	22 805.33	.10
H ₂ C ¹² :C ¹³ HCl ³⁵	4- 768	2, 0, 2← 1, 0, 1	Ground	5/2 3/2	22 805.33	.10
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	10, 5, 5←10, 4, 7	Ground		22 805.9	.3
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	3, 0, 3← 2, 1, 2	Ground		22 808.47	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		22 809.1	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	7, 5, 2← 7, 5, 3	Ground		22 810.92	
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground		22 815.64	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Excited	9/2 7/2	22 818.3	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		22 818.83	
O ¹⁸ C ¹² S ³²	4- 531	2← 1	Ground		22 819.30	
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	4, 1, 4← 3, 1, 3	Ground		22 819.59	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		22 820.	5.
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported			22 820.	
P ³¹ H ₂ D	4-1782	Not Reported	Ground		22 821.90	.05
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	11, 8, 3←11, 8, 4	Ground		22 822.2	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 1, 3← 2, 1, 2	Ground	7/2 7/2	22 826.2	
C ¹² H ₃ C ¹² O ¹⁶ H	3- 491	Not Reported			22 827.	3.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		22 827.3	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹² H -A	3- 501	2, 1, 2← 1, 1, 1	Ground		22 827.91	.2
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 3, 5← 7, 3, 4	Ground		22 829.2	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		22 830.	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported			22 830.	10.
a-C ¹² HD ₂ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 678	6, 1, 5← 6, 0, 6	Ground		22 833.	1.
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Ground	5/2 5/2	22 834.1	
Tl ²⁰³ Br ⁸¹	1-	9← 8	Excited		22 834.13	0.20
N ¹⁴ H ₃	4-1771	3, 2← 3, 2	Ground		22 834.17	.02
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported			22 834.2	.2
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	18,14, 4←18,14, 5	Ground		22 834.8	.1
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	4, 2, 2← 4, 2, 3	Ground		22 836.55	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	3, 0, 3← 2, 1, 2	Ground		22 837.22	.4
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			22 839.43	
Tl ²⁰⁵ Br ⁸¹	1-	9← 8	Ground		22 839.75	0.10
C ¹² F ₃ ¹⁹ C ¹³ :C ¹² H	4- 872	4, ← 3,	Ground		22 839.9	.3
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			22 839.91	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 2, 2← 2, 2, 1	Ground	7/2 5/2	22 840.3	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	8, 7, 2← 8, 5, 3	Ground		22 840.5	
C ¹² DH ₂ C ¹² HDF ¹⁹	3- 562	6, 1, 5← 6, 1, 6	Ground		22 841.0	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			22 842.	5.
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Excited	7/2 5/2	22 843.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			22 844.7	
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₂	3- 237	11, 1,10←11, 0,11	Ground					22 844.72	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			22 845.1	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 3, 4← 7, 2, 5	Ground	11/2	11/2			22 846.60	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 3, 4← 7, 2, 5	Ground	17/2	17/2			22 847.27	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 3, 4← 7, 2, 5	Ground	11/2	11/2			22 847.27	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 3, 4← 7, 2, 5	Ground	17/2	17/2			22 848.00	.2
O ¹⁸ C ¹² S ³²	4- 531	2← 1	Excited					22 848.70	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 3, 4← 7, 2, 5	Ground	13/2	13/2			22 849.41	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 3, 4← 7, 2, 5	Ground	15/2	15/2			22 850.10	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 3, 4← 7, 2, 5	Ground	13/2	13/2			22 850.10	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 3, 4← 7, 2, 5	Ground	15/2	15/2			22 850.83	.2
C ¹² H ₂ :C ¹² F ¹⁹ Cl	4- 632	9, 4, 5← 8, 5, 4	Ground					22 852.40	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 852.9	.1
C ₆ H ₅ O ¹⁶ H	3-1051	6, 0, 6← 5, 1, 5	Ground					22 854.87	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Ground					22 855.91	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 856.	5.
C ¹² ₂ H ₂ S ^b C ¹² ₂ H ₂ ^b	4- 854	Not Reported						22 857.0	.2
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	11, 4, 7←11, 3, 8	Ground					22 858.7	.5
C ₆ H ₅ F ¹⁹	4-1281	6, 1, 6← 5, 1, 5	Ground					22 863.3	.1
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	8, 1, 7← 8, 0, 8	Ground					22 864.92	
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	12, 5, 7←12, 4, 9	Ground					22 865.6	.3
O ₃ ¹⁸	4-1845	17, 1,17←16, 2,14	Ground					22 866.	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	9, 6, 3← 9, 6, 4	Ground					22 866.67	.1
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	9, 5, 4← 9, 4, 6	Ground					22 866.9	.3
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	9, 6, 3← 9, 6, 4	Ground					22 867.00	.1
C ¹³ ₂ H:C ¹² HO ¹⁶ C ¹² H:C ¹² ₂ H	4-1157	2, 1, 2← 1, 1, 1	Ground					22 868.1	.1
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁷	4- 672	6, 0, 6← 5, 1, 5	Ground					22 869.4	.5
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					22 870.	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Ground	7/2	5/2			22 870.2	
O ¹⁸ C ¹² S ³²	4- 531	2← 1	Excited					22 871.28	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Ground	5/2	3/2			22 871.5	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	3, 2, 2← 2, 2, 1	Ground	9/2	7/2			22 872.8	
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁷	4- 672	6, 0, 6← 5, 1, 5	Ground					22 873.9	.5
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					22 874.0	1.
HN ¹⁴ C ¹² S ³⁴	4- 316	2, 1, 2← 1, 1, 1	Ground					22 874.59	.5
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			22 877.1	
C ₆ H ₅ N ¹⁴ O ¹⁶	3-1041	10, 4, 7← 9, 4, 6	Ground					22 883.	3.
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	6, 2, 4← 6, 1, 5	Ground					22 883.98	.2
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	20, 1,20←19, 2,17	Ground					22 889.15	.1
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	6, 1, 5← 6, 1, 6	Ground					22 890.95	.01
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						22 892.11	.1
C ¹² D ₂ HC ¹² :C ¹² C ¹² F ¹⁹	3- 897	9, , 1← 8, ,	Ground					22 893.5	.1
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			22 894.8	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	20, 1,20←19, 2,17	Ground					22 895.76	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported			22 900.	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 0, 3← 2, 0, 2	Ground		22 900.18	.08
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	7, 5, 2← 7, 5, 3	Ground		22 900.8	.1
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	5, 5, 1← 5, 3, 2	Ground		22 901.1	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported			22 902.87	
Tl ²⁰³ Br ⁸¹	1-	9← 8	Ground		22 903.48	0.10
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 2← 2, 2, 1	Ground	3/2 1/2	22 903.9	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported			22 904.4	.5
S ³² O ₂ ⁶	4-1831	Not Reported			22 904.95	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		22 905.0	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	7, 5, 2← 7, 4, 3	Ground		22 906.5	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	4, 3, 2← 4, 1, 3	Ground		22 906.5	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 2, 2← 2, 2, 1	Ground		22 906.58	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 2← 2, 2, 1	Ground	5/2 3/2	22 906.7	
HN ¹⁴ C ¹² S ³⁴	4- 316	2, 0, 2← 1, 0, 1	Ground		22 906.79	.5
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	10, 3, 7←10, 2, 8	Ground		22 907.56	.2
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 1, 2← 2, 1, 1	Ground		22 907.60	
s-C ¹² H ₂ DS ²⁸ H ₂ F ¹⁹	3- 247	2, 0, 2← 1, 0, 1	Ground		22 907.78	.10
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	7, 2, 5← 7, 1, 6	Ground	11/2 11/2	22 908.0	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	7, 2, 5← 7, 1, 6	Ground	17/2 17/2	22 908.0	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	7, 2, 5← 7, 1, 6	Ground	15/2 15/2	22 908.0	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	7, 2, 5← 7, 1, 6	Ground	13/2 13/2	22 908.0	.2
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground		22 908.0	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 1, 2← 2, 1, 1	Ground		22 908.10	.1
4d-C ₆ H ₅ F ¹⁹	4-1283	8, 1, 7← 8, 1, 8	Ground		22 908.8	.1
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground		22 909.23	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	4, 2, 3← 3, 2, 2	Ground		22 910.0	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Ground	3/2 3/2	22 910.9	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 2, 1← 2, 2, 0	Ground		22 911.06	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	5/2 3/2	22 911.3	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 1← 2, 2, 0	Ground	3/2 1/2	22 911.7	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	7, 2, 5← 7, 1, 6	Ground	17/2 17/2	22 912.1	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	7, 2, 5← 7, 1, 6	Ground	11/2 11/2	22 912.1	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	7, 2, 5← 7, 1, 6	Ground	15/2 15/2	22 912.1	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	7, 2, 5← 7, 1, 6	Ground	13/2 13/2	22 912.1	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 2, 7← 8, 1, 7	Ground		22 912.6	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		22 913.4	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground	3/2 3/2	22 913.8	.1
C ¹² Cl ₃ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, 0, 7← 6, 0, 6	Ground		22 914.	
C ¹² Cl ₃ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, 1, 7← 6, 1, 6	Ground		22 914.	
HN ¹⁴ C ¹² S ³⁴	4- 316	Not Reported	Ground		22 915.	
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground		22 917.9	.2
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	23, 2, 22←22, 3, 19	Ground		22 918.	
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	7, 7, 1← 7, 6, 2	Ground		22 918.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 918.7	.1
C ¹² H ₃ Si ²⁸ HDF ¹⁹	3- 252	2, 1, 2← 1, 1, 1	Ground					22 919.05	.10
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						22 919.28	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 921.2	.1
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	4, 1, 3← 4, 0, 4	Ground					22 921.58	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 3← 2, 1, 2	Ground		7/2		7/2	22 923.4	
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	22 923.4	
N ¹⁴ H ₃	4-1771	7, 6← 7, 6	Ground					22 924.94	.02
K ³⁹ Cl ³⁵	1-	3← 2	Excited					22 925.4	0.5
HDO ₂ ¹⁶	3- 43	10, , ←10, ,						22 928.	3.
S ³² O ₂ ¹⁶	4-1831	Not Reported						22 928.45	.1
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 0, 2← 1, 0, 1	Ground		3/2		1/2	22 931.02	.02
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Excited		5/2		5/2	22 932.0	
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 0, 2← 1, 0, 1	Ground		5/2		5/2	22 932.24	.02
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	10, 3, 7←10, 2, 8	Ground					22 933.80	.2
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 1, 7← 7, 1, 6	Ground					22 936.	
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 2, 2← 2, 2, 1	Ground		3/2		1/2	22 936.5	
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	3, 2, 2← 3, 0, 3	Ground					22 936.8	.1
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 1, 9← 8, 1, 8	Ground					22 937.9	
s-C ¹² DH ₂ C ¹² H ₂ C ¹² H ₃	3- 785	2, 1, 1← 2, 0, 2	Ground					22 938.16	.06
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						22 940.	5.
C ₆ ¹² H ₅ F ¹⁹	4-1281	5, 1, 4← 4, 1, 3	Ground					22 941.0	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground		5/2		5/2	22 941.4	.1
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					22 942.0	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						22 943.	3.
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 1, 7← 7, 1, 6	Ground					22 943.7	
C ₆ ¹² H ₅ F ¹⁹	4-1281	48,15,33←48,15,34	Ground					22 943.9	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	9, 8, 2← 9, 6, 3	Ground					22 944.6	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	3, 1, 2← 2, 1, 1	Ground					22 945.22	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Excited		9/2		7/2	22 945.5	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	3, 1, 2← 2, 1, 1	Ground					22 946.19	.2
HN ¹⁴ C ¹² S ³⁴	4- 316	2, 1, 1← 1, 1, 0	Ground					22 946.47	.5
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 0, 2← 1, 0, 1	Ground		7/2		5/2	22 946.55	.02
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 0, 2← 1, 0, 1	Ground		5/2		3/2	22 946.55	.02
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	3, 1, 2← 2, 1, 1	Ground					22 947.90	
C ¹² HCl ³⁷ :C ¹² F ¹⁹ ₂	4- 612	6, 2, 4← 6, 1, 5	Ground					22 948.4	.3
C ¹² HCl ³⁷ :C ¹² F ¹⁹ ₂	4- 612	6, 2, 4← 6, 1, 5	Ground					22 949.6	.3
2d-C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1294	9, 0, 9← 8, 0, 8	Ground					22 949.7	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 950.2	.1
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 0, 2← 1, 0, 1	Ground		3/2		3/2	22 956.74	.02
H ₂ C ¹² :C ¹² Cl ^b ₂	4- 663	Not Reported	Ground					22 958.7	1.
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Ground		5/2		5/2	22 959.2	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₃ Cl ³⁵	3- 901	8, 0, 8← 7, 0, 7	Ground					22 960.93	.05
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	7, 1, 6← 7, 1, 7	Ground					22 964.06	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	4, 1, 3← 3, 1, 2	Ground					22 964.29	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹² HO ¹⁶	4- 381	9, 2, 7← 9, 2, 8	Ground					22 965.71	
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	10, 7, 3←10, 6, 4	Ground					22 966.5	
C ₆ H ₅ O ¹⁶ H	3-1051	6, 0, 6← 5, 1, 5	Ground					22 967.07	
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	6, 5, 2← 6, 4, 3	Ground					22 967.7	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						22 968.	3.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 3, 2← 3, 3, 1	Ground	11/2		9/2		22 968.75	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 3, 1← 3, 3, 0	Ground	11/2		9/2		22 968.75	.05
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						22 969.0	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						22 972.	5.
C ₆ H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	10, 4, 6← 9, 4, 5	Ground					22 972.	3.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		22 972.5	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		22 972.5	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		22 972.8	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Ground	3/2		1/2		22 974.0	
N ¹⁴ H ₂ C ₂ ¹² H ₅	3- 631	Not Reported	Ground					22 975.73	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	9, 7, 2← 9, 7, 3	Ground					22 976.	
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	6, 2, 5← 6, 2, 4	Ground					22 976.4	.2
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	10, 7, 3←10, 6, 4	Ground					22 976.59	.05
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						22 978.	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 3, 2← 3, 3, 1	Ground	9/2		7/2		22 978.44	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 3, 1← 3, 3, 0	Ground	9/2		7/2		22 978.44	.05
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 1← 2, 2, 0	Ground	7/2		7/2		22 979.5	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		22 979.5	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	5, 4, 2← 5, 2, 3	Ground					22 979.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					22 980.3	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 980.95	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	2, 1, 2← 1, 0, 1	Ground					22 981.28	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					22 981.60	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						22 982.2	.5
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 771	5, 1, 5← 4, 1, 4	Ground					22 985.16	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Ground					22 985.73	.04
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 0, 2← 1, 0, 1	Ground					22 986.0	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		22 986.35	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		22 986.35	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						22 986.53	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	3, 1, 2← 3, 1, 3	Ground					22 986.7	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	6, 4, 2← 6, 4, 3	Ground					22 989.3	.1
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	Not Reported	Ground	7/2		5/2		22 990.5	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground					22 990.63	.04
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	6, 4, 2← 6, 3, 3	Ground					22 991.5	.1
C ¹² Cl ₃ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, 2, 6← 6, 2, 5	Ground					22 992.	
C ¹² Cl ₃ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, 1, 6← 6, 1, 5	Ground					22 992.	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 2, 6← 9, 1, 9	Ground	9		10		22 992.67	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 2, 6← 9, 1, 9	Ground	7		8		22 992.67	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 2, 6← 9, 1, 9	Ground	8		9		22 994.40	.10
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		22 995.1	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 2← 2, 1, 1	Ground	7/2		7/2		22 996.5	.1
C ¹² H ₁₃ Br ⁸¹	4-1332	16, ←15,	Excited					22 997.	
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	5, 4, 2← 5, 3, 3	Ground					22 998.2	
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 772	5, 1, 4← 4, 1, 3	Ground					22 998.38	.2
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	8, 2, 7← 7, 2, 6	Ground					22 999.59	.05
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 2← 2, 2, 1	Ground	5/2		3/2		22 999.8	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 2← 2, 2, 1	Ground	3/2		3/2		22 999.8	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 2← 2, 2, 1	Ground					22 999.86	.07
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	7, 1, 6← 7, 1, 7	Ground					23 000.94	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		23 002.5	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		23 003.1	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		23 003.1	.1
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					23 004.	5.
N ¹⁴ H ₃	4-1771	15,13←15,13	Ground					23 004.	.02
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Ground	5/2		3/2		23 004.1	
HDC ¹² :C ¹² F ¹⁹	4- 682	4, 2, 2← 4, 2, 3	Ground					23 004.8	.3
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		23 005.9	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		23 007.0	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		23 007.0	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 1← 2, 2, 0	Ground					23 007.09	.08
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		23 007.4	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 1← 2, 2, 0	Ground	3/2		3/2		23 007.4	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		23 009.4	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground	3/2		1/2		23 009.4	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		23 009.4	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		23 009.8	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						23 011.5	.3
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		23 012.2	
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	6, 1, 5← 6, 0, 6	Ground	13/2		13/2		23 012.88	.05
3C ¹³ .C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1299	9, 0, 9← 8, 0, 8	Ground					23 013.9	.2
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	8, 3, 6← 7, 3, 5	Ground					23 014.4	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	8, 4, 5← 7, 4, 4	Ground					23 014.4	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	8, 3, 5← 7, 3, 4	Ground					23 014.4	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	8, 4, 4← 7, 4, 3	Ground					23 014.4	.15
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					23 015.	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	3, 1, 2← 2, 1, 1	Ground	3/2		3/2		23 015.6	.1
C ₆ ¹² H ₅ C ¹³ N ¹⁴	4-1293	9, 0, 9← 8, 0, 8	Ground					23 015.9	.2
C ¹² *D ₂ S ³² C ¹² *D ₂	4- 853	6, 2, 5← 6, 2, 4	Ground					23 016.3	.2
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	6, 1, 5← 6, 0, 6	Ground	11/2		11/2		23 017.24	.05
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 2← 2, 2, 1	Ground	3/2		1/2		23 019.1	.2
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					23 021.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	12, 2,10←12, 1,11	Ground		23 022.5	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Excited	3/2 3/2	23 022.7	.2
C ¹² F ₃ C ¹² :C ¹² H	4- 871	4, ← 3,	Ground		23 023.4	.3
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	12, 2,10←12, 1,11	Ground		23 023.5	.1
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground	9/2 7/2	23 023.5	
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	2, 0, 2← 1, 1, 1	Ground		23 024.7	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	6, 5, 1← 6, 4, 2	Ground		23 025.3	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 1← 2, 2, 0	Ground	3/2 1/2	23 026.1	.2
3d-C ₆ H ₅ F ¹⁹	4-1282	5, 2, 3← 4, 2, 2	Ground		23 026.5	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	2, 1, 2← 1, 1, 1	Ground		23 027.0	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported			23 027.2	.3
C ¹² *HO ¹⁶ C ¹² HC ¹² HC ¹² HC ¹² *H	4-1251	11, 7, 4←11, 6, 6	Ground		23 028.	5.
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 0, 3← 2, 0, 2	Ground		23 028.10	.08
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	4, 3, 1← 4, 3, 2	Ground		23 028.2	.5
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 5, 1← 5, 4, 2	Ground		23 028.32	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 0, 3← 2, 0, 2	Ground	3/2 3/2	23 031.6	.1
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	6, 1, 5← 6, 0, 6	Ground	15/2 15/2	23 032.66	.05
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground		23 033.	5.
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground		23 033.75	.2
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 2, 2← 2, 2, 1	Ground		23 034.05	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 2← 2, 2, 1	Ground	5/2 3/2	23 034.1	
S ³² O ₂ ¹⁶	4-1831	Not Reported			23 034.83	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported			23 035.0	.5
C ¹² HD ₂ Cl ³⁵	4- 431	1, 0, 1← 0, 0, 0	Ground		23 035.00	
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	6, 1, 5← 6, 0, 6	Ground	9/2 9/2	23 036.91	.05
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	6, 1, 5← 6, 0, 6	Ground	13/2 13/2	23 036.91	.05
HC ¹² *:C ¹² HO ¹⁶ C ¹² O ¹⁶ O ¹⁶ *	4- 931	3, 1, 2← 2, 1, 1	Ground		23 037.67	.10
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 2, 1← 2, 2, 0	Ground		23 038.04	.06
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	5/2 3/2	23 038.4	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Ground	3/2 3/2	23 038.7	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	11, 8, 3←11, 7, 4	Ground		23 039.75	.1
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	6, 1, 5← 6, 0, 6	Ground	11/2 11/2	23 041.97	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported			23 042.	3.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 2, 3← 3, 2, 2	Ground	9/2 7/2	23 042.24	.05
Tl ²⁰⁵ Br ⁷⁹	1-	9← 8	Excited		23 042.54	0.10
C ¹² H ₃ C ¹² *:C ¹² C ¹² H ₂ Cl ³⁵	3- 901	8, 2, 6← 7, 2, 5	Ground		23 042.71	.05
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 1← 1, 1, 0	Ground	5/2 3/2	23 043.39	.02
S ³² *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1161	3, 0, 3← 2, 0, 2	Ground		23 043.8	.1
HN ¹⁴ N ¹⁵	4-1703	1, 0, 1← 0, 0, 0	Ground	0 1	23 044.40	.05
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	7, 3, 4← 7, 2, 5	Ground		23 044.93	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
N ¹⁴ H ₂ C ¹² H ₅	3- 631	Not Reported	Ground					23 045.44	.2
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	3, 1, 2← 3, 1, 3	Ground					23 045.70	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	5, 3, 2← 5, 2, 3	Ground					23 046.0	.1
N ¹⁵ H ₃	4-1772	4, 4← 4, 4	Ground					23 046.10	.02
HN ₂ ¹⁴ N ¹⁵	4-1703	1, 0, 1← 0, 0, 0	Ground	2		1		23 046.55	.05
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 1← 1, 1, 0	Ground	3/2		3/2		23 047.00	.02
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		23 047.4	
HN ₂ ¹⁴ N ¹⁵	4-1703	1, 0, 1← 0, 0, 0	Ground	1		1		23 048.03	.05
HN ₂ ¹⁴ N ¹⁵	4-1703	1, 0, 1← 0, 0, 0	Ground					23 048.2	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	11, 8, 3←11, 7, 4	Ground					23 048.95	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						23 049.0	.2
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 1← 1, 1, 0	Ground	5/2		5/2		23 049.57	.02
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 2, 3← 3, 2, 2	Ground	11/2		9/2		23 050.34	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 2, 2← 3, 2, 1	Ground	9/2		7/2		23 050.34	.05
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	3, 1, 2← 3, 1, 3	Ground					23 050.60	.2
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	3, 2, 2← 2, 2, 1	Ground	3/2		1/2		23 052.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 053.	5.
C ¹² F ₃ ⁹ C ¹² :C ¹² H	4- 871	4, 1← 3, 1	Excited					23 053.5	.3
C ¹² HD ₂ Cl ³⁵	4- 431	1, 0, 1← 0, 0, 0	Ground					23 053.62	
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		23 054.65	.02
N ¹⁵ H ₃	4-1772	10, 9←10, 9	Ground					23 054.97	.02
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, 3, 5← 6, 3, 4	Ground					23 055.	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	6, 4, 2← 6, 4, 3	Ground					23 055.80	
t-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 554	3, 2, 1← 4, 1, 4	Ground					23 056.7	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						23 057.6	.2
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 1← 1, 1, 0	Ground	3/2		1/2		23 058.19	.02
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		23 059.77	.05
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	6, 1, 5← 6, 0, 6	Ground	15/2		15/2		23 060.18	.05
C ₈ ¹³³ Br ⁸¹	1-	11←10	Excited					23 061.38	0.20
H ₂ C ¹² :C ¹² HCl ³⁷	4- 767	2, 1, 1← 1, 1, 0	Ground	1/2		1/2		23 063.29	.02
C ¹² D ₃ C ¹² HDC ¹² N ¹⁴	3- 733	3, 1, 3← 2, 1, 2	Ground					23 064.59	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 0, 3← 2, 0, 2	Ground	5/2		5/2		23 064.9	.2
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	6, 1, 5← 6, 0, 6	Ground	9/2		9/2		23 065.47	.05
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	5, 2, 4← 5, 1, 5	Ground					23 066.28	.1
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	8, 3, 5← 8, 2, 6	Ground	19/2		19/2		23 066.35	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	8, 3, 5← 8, 2, 6	Ground	13/2		13/2		23 066.35	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		23 066.5	
K ³⁹ Cl ³⁵	1-	3← 2	Ground					23 067.5	0.5
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	8, 3, 5← 8, 2, 6	Ground	17/2		17/2		23 067.67	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	8, 3, 5← 8, 2, 6	Ground	15/2		15/2		23 067.67	.2
C ¹² F ₃ ⁹ C ¹² :C ¹² H	4- 871	4, ← 3,	Excited					23 067.7	.3
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		23 068.2	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 2← 2, 2, 1	Ground	5/2	5/2			23 068.4	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 2← 2, 2, 1	Ground	7/2	5/2			23 068.4	.1
C ¹² HD ₂ Cl ³⁵	4- 431	1, 0, 1← 0, 0, 0	Ground					23 068.51	
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	8, 3, 5← 8, 2, 6	Ground	19/2	19/2			23 068.63	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	8, 3, 5← 8, 2, 6	Ground	13/2	13/2			23 068.63	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	8, 3, 5← 8, 2, 6	Ground	15/2	15/2			23 069.90	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	8, 3, 5← 8, 2, 6	Ground	17/2	17/2			23 069.90	.2
c-HF ¹⁹ C ¹² :C ¹³ HF ¹⁹	4- 692	4, 1, 3← 4, 0, 4	Ground					23 070.58	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 071.58	
C ¹² H C ¹² F ¹⁹ :C ¹² H	3- 721	11, 8, 3←11, 7, 4	Ground					23 072.82	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	8, 3, 5← 8, 2, 6	Ground	19	19			23 073.27	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	8, 3, 5← 8, 2, 6	Ground	13	13			23 073.27	.2
(C ¹² H ₃) ₂ S ³⁴	3- 602	1, 1, 1← 0, 0, 0	Ground					23 073.35	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					23 073.8	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	3, 2, 2← 3, 1, 3	Ground					23 074.5	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	8, 3, 5← 8, 2, 6	Ground	15	15			23 074.50	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	8, 3, 5← 8, 2, 6	Ground	17	17			23 074.50	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			23 075.4	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 2, 1← 2, 2, 0	Ground	5/2	5/2			23 075.4	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	8, 3, 5← 8, 2, 6	Ground	13	13			23 075.56	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	8, 3, 5← 8, 2, 6	Ground	19	19			23 075.56	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Ground	5/2	5/2			23 076.5	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	8, 3, 5← 8, 2, 6	Ground	17/2	17/2			23 076.80	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	8, 3, 5← 8, 2, 6	Ground	15/2	15/2			23 076.80	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	4, 2, 2← 4, 2, 3	Ground					23 077.5	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	4, 2, 2← 4, 1, 3	Ground					23 077.5	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					23 078.2	.1
Si ²⁸ HD ₂ N ¹⁴ C ¹² S ³²	4- 498	8, 1, ← 7, 1,	Ground					23 078.48	.1
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						23 080.	
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	5, 1, 4← 5, 1, 5	Ground	5	5			23 080.06	.1
a-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 184	3, 0, 3← 2, 0, 2	Ground					23 080.34	.1
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						23 081.	
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	11, 8, 3←11, 7, 4	Ground					23 081.1	
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	5, 1, 4← 5, 1, 5	Ground	4	4			23 081.86	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			23 082.2	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 0, 3← 2, 0, 2	Ground	7/2	7/2			23 082.2	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	5, 1, 4← 5, 1, 5	Ground	6	6			23 082.26	.1
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	4, 1← 3, 1	Excited					23 082.4	.3
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					23 082.8	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 2, 3← 3, 2, 2	Ground	7/2	5/2			23 083.38	.05
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	2, 1, 1← 1, 1, 0	Ground					23 083.86	.2
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	2, 0, 2← 1, 0, 1	Ground					23 083.9	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	7, 1, 6← 7, 0, 7	Ground					23 084.25	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			23 084.3	.1
Si ²⁸ HD ₂ N ¹⁴ C ¹² S ³²	4- 498	8, 7, ← 7, 7,	Ground					23 084.74	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						23 088.58	.1
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	10, 9, 2←10, 7, 3	Ground					23 090.0	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 1, 4← 5, 0, 5	Ground		9/2		9/2	23 090.50	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 1, 4← 5, 0, 5	Ground		11/2		11/2	23 090.50	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 2, 2← 3, 2, 1	Ground		7/2		5/2	23 090.64	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 090.83	
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	2, 2, 0← 1, 1, 0	Ground					23 091.31	.1
Si ²⁸ D ₃ Cl ³⁷	4-1447	2, ← 1,	Ground					23 091.4	.2
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	3, 2, 2← 3, 0, 3	Ground					23 092.2	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					23 092.2	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Excited		7/2		5/2	23 092.3	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 1, 4← 5, 0, 5	Ground		13/2		13/2	23 092.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 1, 4← 5, 0, 5	Ground		7/2		7/2	23 092.30	.2
Si ²⁸ HD ₂ N ¹⁴ C ¹² S ³²	4- 498	8, 6, ← 7, 6,	Ground					23 092.61	.1
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	9, 4, 5← 9, 4, 6	Ground					23 093.6	.05
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	3, 1, 2← 3, 0, 3	Ground					23 093.8	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	3, 1, 2← 3, 1, 3	Ground					23 093.8	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Ground					23 094.27	.05
HN ¹⁵ N ₂ ¹⁴	4-1704	1, 0, 1← 0, 0, 0	Ground		1		1	23 095.02	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 1, 4← 5, 0, 5	Ground		11/2		11/2	23 095.25	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 1, 4← 5, 0, 5	Ground		9/2		9/2	23 095.25	.2
HN ¹⁵ N ₂ ¹⁴	4-1704	1, 0, 1← 0, 0, 0	Ground		2		1	23 095.46	.05
HN ¹⁵ N ₂ ¹⁴	4-1704	1, 0, 1← 0, 0, 0	Ground		0		1	23 096.05	.05
HN ¹⁵ N ₂ ¹⁴	4-1704	1, 0, 1← 0, 0, 0	Ground					23 096.7	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 1, 4← 5, 0, 5	Ground		13/2		13/2	23 097.14	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 1, 4← 5, 0, 5	Ground		7/2		7/2	23 097.14	.2
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	12, 9, 3←12, 9, 4	Ground					23 097.4	.1
Cs ¹³³ Br ⁷⁹	1-	11←10	Excited					23 097.97	0.20
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 098.1	.1
N ¹⁴ H ₃	4-1771	2, 1← 2, 1	Ground					23 098.79	.02
Si ²⁸ HD ₂ N ¹⁴ C ¹² S ³²	4- 498	8, 5, ← 7, 5,	Ground					23 099.36	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	23 100.5	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 2← 2, 2, 1	Ground		7/2		7/2	23 100.5	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	9, 1, 8← 9, 0, 9	Ground					23 101.55	.2
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 103.8	1.
C ^b H ₂ :C ^b HBr ⁸¹	4- 754	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	23 103.9	
Si ²⁸ HD ₂ N ¹⁴ C ¹² S ³²	4- 498	8, 4, ← 7, 4,	Ground					23 104.24	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	3, 2, 2← 3, 0, 3	Ground					23 104.9	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	3, 2, 2← 3, 1, 3	Ground					23 104.9	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ E	3- 512	4, 1, 3← 4, 0, 4	Ground					23 105.61	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 106.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 106.34	
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	23 107.9	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 1← 2, 2, 0	Ground		7/2		7/2	23 107.95	.05
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	23 107.95	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ HD ₂ N ¹⁴ C ¹² S ³²	4- 498	8, 3, ← 7, 3,	Ground					23 108.25	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	23 108.25	.1
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	13, 5, 8←13, 4,10	Ground					23 110.0	.3
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	4, 3, 2← 4, 1, 3	Ground					23 110.9	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	4, 3, 2← 4, 2, 3	Ground					23 110.9	.1
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	8, 2, 6← 7, 2, 5	Ground					23 111.1	
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	4, ← 3,	Excited					23 111.2	.3
Si ²⁸ HD ₂ N ¹⁴ C ¹² S ³²	4- 498	8, 2, ← 7, 2,	Ground					23 111.59	.1
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, , ← 6, ,	Ground					23 111.9	1.0
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	3, 1, 2← 2, 1, 1	Ground					23 112.13	.2
Tl ²⁰³ Br ⁷⁹	1-	9← 8	Excited					23 112.80	0.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 113.3	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					23 113.8	.2
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	3, 1, 2← 3, 1, 3	Ground					23 114.4	.3
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	4, 3, 2← 4, 1, 3	Ground					23 115.1	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 3, 1← 3, 3, 0	Ground		7/2		5/2	23 116.56	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 3, 2← 3, 3, 1	Ground		7/2		5/2	23 116.56	.05
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -A	3- 511	4, 1, 3← 4, 0, 4	Ground					23 116.71	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	23 118.8	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	23 118.8	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 119.06	.04
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						23 119.2	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 3, 5← 8, 2, 6	Ground		19/2		19/2	23 120.90	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 3, 5← 8, 2, 6	Ground		13/2		13/2	23 120.90	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 3, 5← 8, 2, 6	Ground		15/2		15/2	23 120.90	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 3, 5← 8, 2, 6	Ground		17/2		17/2	23 120.90	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					23 121.20	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 3, 5← 8, 2, 6	Ground		13/2		13/2	23 122.25	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 3, 5← 8, 2, 6	Ground		19/2		19/2	23 122.25	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 3, 5← 8, 2, 6	Ground		15/2		15/2	23 122.25	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 3, 5← 8, 2, 6	Ground		17/2		17/2	23 122.25	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 0, 3← 2, 0, 2	Ground					23 123.76	.06
C ¹² *H ₂ C ¹² D:C ¹² *D	4-1033	7, 5, 2← 7, 5, 3	Ground					23 124.0	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 126.	5.
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, , ← 6, ,	Excited					23 127.3	1.0
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	8, 4, 5← 8, 4, 4	Ground					23 128.45	
HDO ₂ ¹⁶	3- 43	20, , ←20, ,						23 130.	3.
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						23 130.70	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						23 131.19	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 1, 2← 2, 1, 1	Ground		3/2		3/2	23 131.6	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 2← 2, 2, 1	Ground					23 133.36	.06
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	23 133.6	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	23 133.6	.2
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	3, 3, 0← 3, 2, 1	Ground					23 134.21	.03
C ₆ ¹² H ₅ F ¹⁹	4-1281	6, 0, 6← 5, 0, 5	Ground					23 134.6	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		23 135.1	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	11, 2, 9←11, 1,10	Ground					23 137.29	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 0, 2← 1, 1, 1	Excited					23 138.	3.
C ¹² Cl ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, 4, 3← 6, 4, 2	Ground					23 138.	
C ¹² Cl ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	7, 3, 4← 6, 3, 3	Ground					23 138.	
F ₂ ¹⁹ O ₂ ¹⁸	3- 13	1, 1, 1← 0, 0, 0	Ground					23 138.5	.5
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		23 139.35	
2C ¹³ -C ₆ H ₅ C ¹² N ¹⁴	4-1298	9, 0, 9← 8, 0, 8	Ground					23 140.0	.1
C ₈ ¹³³ Br ⁸¹	1-	11←10	Excited					23 140.61	0.20
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 1← 2, 2, 0	Ground					23 140.72	.06
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 1← 2, 2, 0	Ground	3/2		3/2		23 140.9	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		23 140.9	.1
3d-C ₆ H ₅ F ¹⁹	4-1282	8, 3, 6← 8, 1, 7	Ground					23 141.2	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	2, 0, 2← 1, 0, 1	Ground					23 141.9	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	2, 1, 2← 1, 0, 1	Ground					23 144.2	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	6, 5, 2← 6, 4, 3	Ground					23 144.2	.2
C ¹² H ₃ C ¹² HDF ¹⁹	3- 552	1, 1, 0← 1, 0, 1	Ground					23 144.5	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						23 145.9	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 0, 3← 2, 0, 2	Ground	5/2		3/2		23 146.2	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 0, 3← 2, 0, 2	Ground	3/2		1/2		23 146.2	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	6, 5, 2← 6, 3, 3	Ground					23 146.5	.1
Si ²⁸ HD ₂ N ¹⁴ C ¹² S ³²	4- 498	8, 1, ← 7, 1,	Ground					23 147.76	.1
Si ³⁰ D ₃ Cl ³⁵	4-1446	2, ← 1,	Ground					23 147.9	.3
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						23 148.	
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	3, 2, 2← 2, 2, 1	Ground					23 149.6	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 5← 5, 5	Ground					23 151.67	.1
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	4, 3, 2← 4, 1, 3	Ground					23 152.8	.1
C ¹² F ₃ C ¹² :C ¹² H	4- 871	4, ← 3,	Excited					23 153.0	.3
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	3, 1, 2← 2, 1, 1	Ground	7/2		7/2		23 153.0	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 4← 5, 4	Ground					23 153.71	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 153.9	1.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						23 154.47	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 3← 5, 3	Ground					23 155.25	.1
C ¹³ D ₃ C ¹² :C ¹² Cl ³⁵	4- 981	6, 0← 5, 0	Ground	11/2		9/2		23 155.79	.04
C ¹³ D ₃ C ¹² :C ¹² Cl ³⁵	4- 981	6, 0← 5, 0	Ground	9/2		7/2		23 155.79	.04
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 2← 5, 2	Ground					23 156.34	.1
C ¹³ D ₃ C ¹² :C ¹² Cl ³⁵	4- 981	6, 0← 5, 0	Ground	13/2		11/2		23 156.71	.04
C ¹³ D ₃ C ¹² :C ¹² Cl ³⁵	4- 981	6, 0← 5, 0	Ground	15/2		13/2		23 156.71	.04
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 1← 5, 1	Ground					23 156.99	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		23 157.0	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 0← 5, 0	Ground					23 157.21	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						23 158.02	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 2, 3← 3, 2, 2	Ground	13/2		11/2		23 158.50	.05
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		23 159.1	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 162.	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 0, 3← 2, 0, 2	Ground					23 162.57	.10
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	1, 1, 0← 1, 0, 1	Ground					23 164.9	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 166.07	.1
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 2, 2← 2, 2, 1	Ground					23 166.53	.06
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 2, 2← 3, 2, 1	Ground	13/2		11/2		23 167.05	.05
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground	3/2		3/2		23 167.8	.2
HN ¹⁴ C ¹² S ³³	4- 315	2, 0, 2← 1, 0, 1	Ground	3/2		1/2		23 167.89	.5
HN ¹⁴ C ¹² S ³³	4- 315	2, 0, 2← 1, 0, 1	Ground	5/2		5/2		23 167.89	.5
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	5/2		5/2		23 169.1	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 2, 1← 2, 2, 0	Ground					23 171.03	.06
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 2, 5← 7, 1, 6	Ground	11/2		11/2		23 172.22	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 2, 5← 7, 1, 6	Ground	13/2		13/2		23 172.22	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 2, 5← 7, 1, 6	Ground	15/2		15/2		23 172.22	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 2, 5← 7, 1, 6	Ground	17/2		17/2		23 172.22	.2
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		23 174.5	
HN ¹⁴ C ¹² S ³³	4- 315	2, 0, 2← 1, 0, 1	Ground	5/2		3/2		23 174.56	.5
HN ¹⁴ C ¹² S ³³	4- 315	2, 0, 2← 1, 0, 1	Ground	7/2		5/2		23 174.56	.5
HN ¹⁴ C ¹² S ³³	4- 315	2, 0, 2← 1, 0, 1	Ground	1/2		1/2		23 174.56	.5
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -E	3- 516	4, 1, 3← 4, 0, 4	Ground					23 174.82	.2
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	4, 0, 4← 3, 1, 3	Ground					23 174.95	.2
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	1, 1, 0← 1, 0, 1	Excited					23 175.	20.
Tl ²⁰³ Br ⁷⁹	1-	9← 8	Excited					23 175.68	0.20
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 2, 5← 7, 1, 6	Ground	11/2		11/2		23 176.50	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 2, 5← 7, 1, 6	Ground	17/2		17/2		23 176.50	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 2, 5← 7, 1, 6	Ground	15/2		15/2		23 176.50	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	7, 2, 5← 7, 1, 6	Ground	13/2		13/2		23 176.50	.2
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		23 177.1	
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	7, 6, 2← 7, 5, 3	Ground					23 178.1	.1
Cs ¹³³ Br ⁷⁹	1-	11←10	Excited					23 178.25	0.20
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 179.	3.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 179.	5.
HN ¹⁴ C ¹² S ³³	4- 315	2, 0, 2← 1, 0, 1	Ground	3/2		3/2		23 179.70	.5
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 180.0	.3
Tl ²⁰⁵ Br ⁷⁹	1-	9← 8	Excited					23 183.49	0.10
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2		5/2		23 183.6	
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	7, 6, 2← 7, 4, 3	Ground					23 183.7	.1
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² Cl ³⁵	3-1061	13, ←12,	Ground					23 183.7	.5
Ge ⁷⁶ H ₃ Br ⁸¹	4- 108	5, ← 4,	Ground					23 183.8	1.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 184.	5.
C ¹² D ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 182	3, 1, 2← 2, 1, 1	Ground					23 185.23	.1
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -A	3- 515	4, 1, 3← 4, 0, 4	Ground					23 185.78	.2
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		23 186.0	
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 1, 2← 2, 1, 1	Ground					23 187.27	.08
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	3/2		1/2		23 187.5	.3
C ¹² H ₂ F ₂ ¹⁹	4- 351	50,12,39←49,13,36	Ground					23 188.45	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ F ₂ ¹⁹	4- 351	50,12,38←49,13,37	Ground					23 188.45	.10
(C ¹² H ₃) ₃ P ³¹	3- 861	2, 1← 1, 1	Excited					23 188.65	.03
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	1, 1, 1← 0, 0, 0	Ground					23 189.52	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 190.	5.
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	8, 3, 5← 8, 2, 6	Ground					23 191.46	.2
C ¹³ H ₃ S ³² C ¹² H ₃	3- 603	1, 1, 1← 0, 0, 0	Ground					23 192.10	.05
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	2, 1, 2← 1, 1, 1	Ground					23 193.80	.2
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 1← 5, 1	Excited					23 194.67	.1
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground					23 196.14	.2
s-C ¹² H ₂ DS ³² C ¹² H ₃	3- 604	1, 1, 1← 0, 0, 0	Ground					23 196.66	.05
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 3← 2, 1, 2	Ground					23 196.72	.04
C ¹³ H ₂ :C ¹³ HBr ⁸¹	4- 734	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		23 198.2	.3
O ¹⁶ C ¹² S ³⁶	4- 525	2← 1	Ground					23 198.66	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2		5/2		23 201.6	
C ¹² D ₃ C ¹² :C ¹² Cl ³⁷	4- 974	6, 5← 5, 5	Ground	13/2		11/2		23 202.09	.04
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 3← 5, 3	Excited					23 202.96	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	19, 3,16←19, 3,17						23 203.41	
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						23 203.6	.2
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	12, 4, 8←12, 3, 9	Ground					23 203.8	.5
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 4← 5, 4	Excited					23 204.48	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 2← 5, 2	Excited					23 204.48	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 3← 5, 3	Excited					23 205.54	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 1← 5, 1	Excited					23 205.54	.1
C ¹² D ₃ C ¹² :C ¹² Cl ³⁷	4- 974	6, 4← 5, 4	Ground	13/2		11/2		23 206.22	.04
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 2← 5, 2	Excited					23 206.23	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 0← 5, 0	Excited					23 206.23	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						23 207.	3.
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	2, 0, 2← 1, 0, 1	Ground					23 207.2	.1
DC ¹² N ¹⁵	4- 296	11←11	Excited					23 207.45	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 208.1	.3
C ¹² D ₃ C ¹² :C ¹² Cl ³⁷	4- 974	6, 4← 5, 4	Ground	11/2		9/2		23 208.34	.04
C ¹² D ₃ C ¹² :C ¹² Cl ³⁷	4- 974	6, 3← 5, 3	Ground	13/2		11/2		23 209.48	.04
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 210.	.1
C ¹² D ₃ C ¹² :C ¹² Cl ³⁷	4- 974	6, 3← 5, 3	Ground	11/2		9/2		23 210.33	.04
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 3← 2, 1, 2	Ground	7/2		5/2		23 210.6	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	5/2		3/2		23 212.1	
1C ¹³ .C ¹² H ₅ C ¹² N ¹⁴	4-1297	9, 0, 9← 8, 0, 8	Ground					23 212.6	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	5, 3, 2← 5, 3, 3	Ground					23 213.45	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		23 213.5	.1
C ¹² D ₃ C ¹² :C ¹² Cl ³⁷	4- 974	6, 0← 5, 0	Ground	13/2		11/2		23 213.64	.04
C ¹² D ₃ C ¹² :C ¹² Cl ³⁷	4- 974	6, 0← 5, 0	Ground	15/2		13/2		23 213.64	.04
C ¹² *D ₂ S ³² C ¹² *D ₂	4- 853	4, 1, 4← 4, 1, 3	Ground					23 214.3	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 3, 1← 3, 3, 0	Ground	13/2		11/2		23 214.30	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F		Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 3, 2← 3, 3, 1	Ground	13/2	11/2	23 214.30	.05
C ¹² D ₃ C ¹² ; C ¹² Cl ³⁷	4- 974	6, 3← 5, 3	Ground	9/2	7/2	23 214.38	.04
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported				23 215.2	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 2← 2, 2, 1	Ground	5/2	5/2	23 215.2	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 2← 2, 2, 1	Ground	7/2	5/2	23 215.2	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported				23 215.3	.3
C ¹² D ₃ C ¹² ; C ¹² Cl ³⁷	4- 974	6, 4← 5, 4	Ground	9/2	7/2	23 215.53	.04
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	2, 1, 2← 1, 1, 1	Ground			23 216.06	.1
C ¹² D ₃ C ¹² ; C ¹² Cl ³⁷	4- 974	6, 5← 5, 5	Ground	9/2	7/2	23 217.02	.04
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	3, 2, 1← 3, 2, 2	Ground			23 217.1	.5
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	6, 1← 5, 1	Excited			23 218.17	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 1← 4, 2, 2	Ground			23 218.36	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported				23 219.	5.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported				23 219.1	.3
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground			23 219.21	.1
Cs ¹³³ Br ⁸¹	1-	11←10	Excited			23 220.22	0.20
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground	3/2	1/2	23 221.3	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground	9/2	7/2	23 222.6	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 1← 2, 2, 0	Ground	5/2	5/2	23 222.6	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 2, 1← 2, 2, 0	Ground	7/2	5/2	23 222.6	.2
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported				23 223.7	.5
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 0, 1← 0, 0, 0	Ground			23 224.6	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground			23 224.7	.1
(C ¹² H ₃) ₃ P ³¹	3- 861	2, ← 1,	Ground			23 225.87	
(C ¹² H ₃) ₃ P ³¹	3- 861	2, 1← 1, 1	Excited			23 225.87	.03
C ₆ H ₅ C ¹² N ¹⁴	4-1291	9, 0, 9← 8, 0, 8	Ground			23 227.8	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	8, 7, 2← 8, 6, 3	Ground			23 228.5	.1
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	2, 1, 2← 1, 0, 1	Ground			23 228.5	.1
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	19/2 11	19/2 11	23 228.68	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	19/2 10	19/2 10	23 228.68	0.20
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported				23 230.27	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground			23 230.3	.1
C ₈ H ₁₃ Br ⁷⁹	4-1331	16, ←15,	Excited			23 231.	
N ¹⁴ H ₃	4-1771	8, 7← 8, 7	Ground			23 232.24	.02
C ¹³ H ₃ C ¹² H ₂ F ¹⁹	3- 556	6, 1, 5← 6, 1, 6	Ground			23 233.1	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 0; 3← 2, 0, 2	Ground	7/2	7/2	23 233.3	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground			23 234.53	.04
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Excited	7/2	5/2	23 235.6	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2	7/2	23 235.7	.2
(C ¹² H ₃) ₃ P ³¹	3- 861	2, ← 1,	Ground			23 239.54	
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground			23 240.0	1.5
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	8, 7, 2← 8, 5, 3	Ground			23 240.7	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	4, 1, 4← 3, 1, 3	Ground			23 242.41	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	9, 3, 6← 9, 2, 7	Ground	21/2	21/2	23 242.90	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	9, 3, 6← 9, 2, 7	Ground	15/2	15/2	23 242.90	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	9, 3, 6← 9, 2, 7	Ground	17/2		17/2		23 242.90	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	9, 3, 6← 9, 2, 7	Ground	19/2		19/2		23 242.90	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 245.	5.
Tl ²⁰³ Br ⁷⁹	1-	9← 8	Excited					23 246.83	0.20
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		23 247.3	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 248.5	.1
HDSe ⁸⁰	4-1757	12, 6, 7←12, 6, 6	Ground					23 249.8	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 250.	
(C ¹² H ₃ C ¹² H ₂) ₂ O ¹⁶	3-1011	Not Reported						23 250.	
C ^b _* H ₂ N ^b H ^b C ^b _* H ₂ ^b	4- 863	Not Reported						23 250.	10.
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 0, 1← 0, 0, 0	Ground					23 250.0	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		23 251.2	.1
HDO ₂ ¹⁶	3- 43	20, , ←20, ,						23 252.	3.
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		23 252.2	
Tl ²⁰⁵ Br ⁷⁹	1-	9← 8	Ground					23 254.06	0.05
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					23 254.8	
C ¹² _* H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² _* O ¹⁶	4-1241	25, 8,17←25, 8,18	Ground					23 256.	5.
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 1, 3← 2, 1, 2	Ground	3/2		3/2		23 256.4	
C ¹² H ₃ S ³² H	3- 221	5, 0, 5← 4, 1, 4	Ground					23 256.9	.1
Cs ¹³³ Br ⁷⁹	1-	11←10	Excited					23 259.19	0.20
C ¹² _* H:C ¹² HO ¹⁶ C ¹² H:C ¹² _* H	4-1151	2, 1, 2← 1, 1, 1	Ground					23 259.30	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 260.	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 3, 3← 6, 2, 4	Ground		9/2	9/2		23 260.30	.2
Cl ³⁷ C ¹³ N ¹⁴	4- 174	2← 1	Ground	7/2	9/2	5/2	7/2	23 260.31	
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	4, 1, 4← 3, 0, 3	Ground					23 261.0	.3
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 3, 3← 6, 2, 4	Ground		15/2	15/2		23 261.50	.2
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 1, 2← 2, 1, 1	Ground		3/2	3/2		23 261.8	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 262.7	1.5
(C ¹² H ₃) ₃ P ³¹	3- 861	2, 1← 1, 1	Excited					23 262.8	
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	19/2	11	17/2	10	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	21/2	9	19/2	8	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	17/2	8	15/2	7	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	19/2	10	17/2	9	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	15/2	9	17/2	8	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	17/2	9	15/2	9	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	23/2	12	21/2	11	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	23/2	13	21/2	12	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	23/2	11	21/2	10	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	23/2	10	21/2	9	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	21/2	10	19/2	9	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	21/2	11	19/2	10	23 263.76	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	21/2	12	19/2	11	23 263.76	0.20
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 3← 2, 1, 2	Ground		7/2	7/2		23 264.0	
N ¹⁴ H ₂ C ₂ ¹² H ₅	3- 631	Not Reported	Ground					23 264.16	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
(C ¹² H ₃) ₃ P ³¹	3- 861	2, ← 1,	Ground					23 264.86	.03
Pb(C ¹² N ¹⁴) ₃	4-1111	5, ← 4,	Ground					23 265.	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 3, 3← 6, 2, 4	Ground	11/2		11/2		23 265.75	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	6, 3, 3← 6, 2, 4	Ground	13/2		13/2		23 267.00	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 270.	1.
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	4, 0, 4← 3, 1, 3	Ground					23 270.4	.2
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	12, 2,10←12, 1,11	Ground	25/2		25/2		23 270.9	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	12, 2,10←12, 1,11	Ground	23/2		23/2		23 270.9	.1
(C ¹² H ₃) ₃ P ³¹	3- 861	2, ← 1,	Excited					23 271.20	
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	12, 2,10←12, 1,11	Ground	21/2		21/2		23 272.4	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	12, 2,10←12, 1,11	Ground	27/2		27/2		23 272.4	.1
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 0, 2← 2, 0, 1	Ground	7/2		7/2		23 274.0	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					23 275.	20.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 276.	5.
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	10, 9, 2←10, 8, 3	Ground					23 277.8	
H ₂ C ¹² *O ¹⁶ C ¹³ *H ₂	4- 842	3, 2, 1← 3, 1, 2	Ground					23 278.5	.3
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 0, 1← 0, 0, 0	Ground					23 279.0	.1
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	13/2	6	13/2	6	23 279.09	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	5/2	4	5/2	4	23 279.09	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	13/2	5	13/2	5	23 279.09	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	19/2	9	17/2	8	23 279.09	0.20
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						23 280.	10.
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	5, 4, 2← 5, 2, 3	Ground					23 280.0	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 397	7, 4, 3← 7, 4, 4	Ground					23 281.	5.
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	13/2	7	17/2	7	23 282.61	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	13/2	4	13/2	4	23 282.61	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	13/2	3	13/2	3	23 282.61	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	7/2	5	7/2	5	23 282.61	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	11/2	4	11/2	4	23 282.61	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	11/2	7	11/2	7	23 282.61	0.20
HC ¹² N ¹⁵	4- 295	10←10	Excited					23 284.1	.3
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 284.2	.1
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	11/2	5	11/2	5	23 285.37	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	11/2	6	11/2	6	23 285.37	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	9/2	4	9/2	4	23 287.37	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	9/2	5	9/2	5	23 287.37	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	7/2	3	7/2	3	23 287.37	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Excited	7/2	4	7/2	4	23 287.37	0.20
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Excited	7/2		7/2		23 288.8	.2
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	11,10, 2←11, 8, 3	Ground					23 289.0	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					23 289.2	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 293.91	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 3, 5← 8, 2, 6	Ground					23 294.78	.03
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	2, 2, 1← 3, 1, 2	Ground					23 295.7	.1
(C ¹² H ₃) ₃ P ³¹	3- 861	2, ← 1,	Excited					23 295.71	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Ground	3/2	1/2			23 297.2	
C ¹² H ₃ Si ³⁰ H ₂ F ¹⁹	3- 243	2, 1, 2← 1, 1, 1	Ground					23 298.30	.10
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 1, 2← 2, 1, 1	Excited	9/2	7/2			23 298.5	
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	9, 8, 2← 9, 7, 3	Ground					23 299.4	.1
Cs ¹³³ Br ⁸¹	1-	11←10	Excited					23 299.79	0.20
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 300.79	.1
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -E	3- 514	2, 0, 2← 1, 0, 1	Ground					23 301.71	.2
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 1, 3← 2, 1, 2	Ground	5/2	5/2			23 302.9	
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -A	3- 513	2, 0, 2← 1, 0, 1	Ground					23 303.55	.2
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	10, 4, 6←10, 3, 7	Ground					23 303.7	.5
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	3, 1, 2← 2, 1, 1	Ground	7/2	7/2			23 304.8	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	4, 2, 2← 4, 2, 3	Ground					23 305.88	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3← 2, 0, 2	Ground	3/2	3/2			23 306.7	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1← 2, 2, 0	Ground	3/2	1/2			23 306.7	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 1, 2← 2, 1, 1	Ground	5/2	5/2			23 307.2	
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2 10	19/2 10			23 308.30	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2 11	19/2 11			23 308.30	0.20
C ₆ H ₅ Cl ³⁵	4-1271	9, 1, 9← 8, 1, 8	Ground					23 308.6	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 311.31	.1
C ¹² H ₂ Cl ₂ ³⁵	4- 341	8, 2, 7← 9, 1, 8	Ground					23 312.	5.
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					23 313.9	.5
F ₂ ¹⁹ O ¹⁶	3- 11	4, 0, 4← 3, 1, 3	Ground					23 314.70	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 0, 1← 0, 0, 0	Ground					23 314.8	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 315.1	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 315.55	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 315.91	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	9/2	7/2			23 316.6	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 317.	3.
Tl ²⁰³ Br ⁷⁹	1-	9← 8	Ground					23 317.65	0.10
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 318.0	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 318.2	.1
C ¹³ HCl ³⁵ F ₂ ¹⁹	4- 253	3, 2, 1← 3, 1, 3	Ground					23 318.61	.15
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	11, 2, 9←11, 1,10	Ground					23 319.44	.2
a-C ¹² HD ₂ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 678	7, 3, 4← 7, 2, 5	Ground					23 321.5	.2
C ¹² HDHC ¹² HDF ¹⁹	3- 559	6, 1, 6← 5, 2, 3	Ground					23 322.7	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 323.0	.3
C ¹² *H:C ¹² HO ¹⁶ C ¹³ H:C ¹² *H	4-1153	9, 8, 2← 9, 6, 3	Ground					23 323.8	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 0, 1← 0, 0, 0	Ground					23 324.2	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 326.2	1.5
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 1, 2← 2, 1, 1	Excited	7/2	5/2			23 327.6	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 1, 2← 2, 1, 1	Ground					23 328.91	.06
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2 5	11/2 4			23 328.97	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	11/2 4	9/2 3			23 328.97	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	11/2 7	9/2 6			23 328.97	0.20
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 1, 3← 2, 1, 2	Ground					23 330.08	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 330.30	
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	9/2	3	7/2	2	23 331.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	9/2	6	7/2	5	23 331.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	7/2	2	5/2	1	23 331.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	7/2	5	5/2	4	23 331.51	0.20
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	6, 2, 5 ← 6, 2, 4	Ground					23 332.0	.1
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	15/2	6	13/2	5	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	13/2	7	11/2	6	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	13/2	8	11/2	7	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	7/2	4	5/2	3	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	7/2	3	5/2	2	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	11/2	6	9/2	5	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	13/2	6	11/2	5	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	5/2	4	3/2	3	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	9/2	4	7/2	3	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	9/2	5	7/2	4	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	11/2	5	9/2	4	23 334.50	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	9/2	4	7/2	3	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	15/2	6	13/2	5	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	9/2	5	7/2	4	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	11/2	5	9/2	4	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	5/2	4	3/2	3	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	7/2	3	5/2	2	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	7/2	4	5/2	3	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	13/2	6	11/2	5	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	11/2	6	9/2	5	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	13/2	8	11/2	7	23 335.55	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	13/2	7	11/2	6	23 335.55	0.20
s-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 395	2, 1, 2 ← 1, 1, 1	Ground					23 336.00	.2
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	4, 1, 3 ← 4, 0, 4	Ground					23 336.67	.05
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 337.8	.1
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 339.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 339.	5.
C ₆ H ₅ Cl ³⁵	4-1271	8, 1, 7 ← 7, 1, 6 -	Ground					23 339.	5.0
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 339.0	
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	15/2	7	17/2	8	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	15/2	7	13/2	6	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	5/2	1	3/2	0	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	5/2	3	3/2	2	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	5/2	2	3/2	1	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	17/2	9	15/2	8	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	17/2	10	15/2	9	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	19/2	9	13/2	8	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	15/2	8	17/2	7	23 339.12	0.20
In ¹¹⁵ Br ⁷⁹	1-	7 ← 6	Ground	19/2	8	13/2	7	23 339.12	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ S ³² H	3- 221	2, 1, ← 3, 0,	Ground					23 339.2	.1
C ^b ₄ H ^b ₂ N ^b H ^b C ^b ₄ H ^b ₂	4- 863	Not Reported						23 340.	10.
Cs ¹³³ Br ⁷⁹	1-	11←10	Excited					23 340.26	0.20
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					23 340.67	.04
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	15/2	7	17/2	8	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	17/2	9	15/2	8	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	5/2	2	3/2	1	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	17/2	10	15/2	9	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	5/2	1	3/2	0	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	8	13/2	7	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	9	13/2	8	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	5/2	3	3/2	2	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	15/2	7	13/2	6	23 341.01	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	15/2	8	17/2	7	23 341.01	0.20
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					23 341.31	.1
H ^b ₂ C ^b ₄ O ¹⁶ C ^b ₄ H ^b ₂	4- 846	Not Reported	Excited					23 341.4	.3
C ¹² H ₃ Si ²⁹ H ₂ F ¹⁹	3- 242	2, 1, 2← 1, 1, 1	Ground					23 342.66	.10
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	17/2	9	15/2	8	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	17/2	9	15/2	9	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	12	19/2	11	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	10	21/2	9	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	11	21/2	10	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	13	21/2	12	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	15/2	9	17/2	8	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	10	19/2	9	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	9	19/2	8	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	10	17/2	9	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	11	17/2	10	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	11	19/2	10	23 343.33	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	12	21/2	11	23 343.33	0.20
Ga ⁷¹ I ¹²⁷	1-	7← 6	Excited	19/2	9	17/2	8	23 344.45	0.30
Ga ⁷¹ I ¹²⁷	1-	7← 6	Excited	19/2	8	17/2	7	23 344.45	0.30
Ga ⁷¹ I ¹²⁷	1-	7← 6	Excited	17/2	9	15/2	8	23 344.45	0.30
Ga ⁷¹ I ¹²⁷	1-	7← 6	Excited	13/2	8	15/2	7	23 344.45	0.30
Ga ⁷¹ I ¹²⁷	1-	7← 6	Excited	19/2	11	17/2	10	23 344.45	0.30
Ga ⁷¹ I ¹²⁷	1-	7← 6	Excited	19/2	10	17/2	9	23 344.45	0.30
Ga ⁷¹ I ¹²⁷	1-	7← 6	Excited	15/2	9	13/2	8	23 344.45	0.30
Ga ⁷¹ I ¹²⁷	1-	7← 6	Excited	17/2	7	11/2	6	23 344.45	0.30
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	11	21/2	10	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	12	21/2	11	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	15/2	9	17/2	8	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	11	19/2	10	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	13	21/2	12	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	10	19/2	9	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	17/2	9	15/2	9	23 345.07	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	9	19/2	8	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	10	17/2	9	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	10	21/2	9	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	11	17/2	10	23 345.07	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	17/2	9	15/2	8	23 345.07	0.20
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		7/2		5/2	23 345.6	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Excited		9/2		7/2	23 345.6	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Excited		7/2		7/2	23 345.6	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	4, 3, 2← 3, 3, 1	Ground					23 346.0	
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	12	19/2	11	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	10	21/2	9	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	11	21/2	10	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	12	21/2	11	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	15/2	9	17/2	8	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	17/2	9	15/2	9	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	17/2	8	15/2	7	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	10	17/2	9	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	11	19/2	10	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	10	19/2	9	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	11	17/2	10	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	21/2	9	19/2	8	23 346.51	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	23/2	13	21/2	12	23 346.51	0.20
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					23 347.53	.1
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	23 347.8	.3
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 349.5	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 350.2	1.5
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	3, 1, 2← 3, 1, 3	Ground					23 352.47	
C ¹² C ¹³⁵ C ¹² N ¹⁴	4- 581	7, ← 6,	Excited					23 353.2	1.0
(C ¹² H ₃) ₂ S ³²	3- 601	4, 1, 3← 4, 0, 4	Ground					23 353.25	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 1, 3← 4, 0, 4	Ground					23 353.31	.05
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	15/2	8	15/2	8	23 353.40	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	15/2	6	15/2	6	23 353.40	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	8	13/2	8	23 353.40	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	7	13/2	7	23 353.40	0.20
(C ¹² H ₃) ₂ S ³²	3- 601	4, 1, 3← 4, 0, 4	Ground					23 353.64	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 1, 3← 4, 0, 4	Ground					23 353.66	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 1, 3← 4, 0, 4	Ground					23 354.03	.05
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 354.9	.2
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	2, 1, 1← 2, 1, 2	Ground					23 356.3	.5
C ¹² HCl ³⁵ :C ¹² F ¹⁹ ₂	4- 611	5, 2, 3← 5, 1, 4	Ground		7/2		7/2	23 357.1	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3← 2, 0, 2	Excited		9/2		7/2	23 358.4	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3← 2, 0, 2	Excited		7/2		5/2	23 358.4	
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	6	13/2	6	23 358.74	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	5	13/2	5	23 358.74	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	5/2	4	5/2	4	23 358.74	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	19/2	9	17/2	8	23 358.74	0.20
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	2, 1, 1← 2, 1, 2	Ground					23 359.5	.5
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 2, 4← 5, 1, 5	Ground	13/2	5	13/2	5	23 359.62	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 1, 4← 5, 1, 5	Ground		4		4	23 360.03	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 1, 4← 5, 1, 5	Ground		6		6	23 360.03	.10
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 360.4	.3
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	5, 2, 3← 5, 1, 4	Ground		9/2		9/2	23 360.5	.1
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	7	17/2	7	23 361.35	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	4	13/2	4	23 361.35	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	3	13/2	3	23 361.35	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	11/2	7	11/2	7	23 361.35	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	7/2	5	7/2	5	23 361.35	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	11/2	4	11/2	4	23 361.35	0.20
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 1, 4← 5, 1, 5	Ground		5		5	23 362.43	.10
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	4	13/2	4	23 362.70	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	7	17/2	7	23 362.70	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	13/2	3	13/2	3	23 362.70	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	11/2	7	11/2	7	23 362.70	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	7/2	5	7/2	5	23 362.70	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	11/2	4	11/2	4	23 362.70	0.20
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						23 364.79	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 2, 4← 5, 1, 5	Ground	13/2	7	13/2	7	23 364.80	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 2, 4← 5, 1, 5	Ground	9/2	6	9/2	6	23 364.80	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 2, 4← 5, 1, 5	Ground	9/2	4	9/2	4	23 364.80	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 2, 4← 5, 1, 5	Ground	9/2	3	9/2	3	23 364.80	.1
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	3, 2, 2← 2, 2, 1	Ground					23 365.	5.
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	4, 1, 4← 3, 0, 3	Ground		5/2		3/2	23 365.2	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	4, 1, 4← 3, 0, 3	Ground		7/2		5/2	23 365.2	.1
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	11/2	6	11/2	6	23 365.60	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	11/2	5	11/2	5	23 365.60	0.20
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	4, 1, 4← 3, 0, 3	Ground		9/2		7/2	23 366.8	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	4, 1, 4← 3, 0, 3	Ground		11/2		9/2	23 366.8	.1
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	9/2	4	9/2	4	23 367.97	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	9/2	5	9/2	5	23 367.97	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	7/2	4	7/2	4	23 367.97	0.20
In ¹¹⁵ Br ⁷⁹	1-	7← 6	Ground	7/2	3	7/2	3	23 367.97	0.20
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	23 368.2	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Ground		7/2		7/2	23 368.2	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 2, 4← 5, 1, 5	Ground	11/2	5	11/2	5	23 369.93	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 1, 2← 1, 1, 1	Ground					23 370.40	.10
Cl ³⁷ C ¹² N ¹⁴	4- 173	2← 1	Ground	3/2	5/2	1/2	3/2	23 372.72	
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , ← 2, ,	Ground					23 374.4	.1
HDO ¹⁷	4-1714	3, , ← 2, ,	Ground					23 374.4	.05
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 1, 2← 2, 1, 1	Excited		3/2		3/2	23 374.7	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ^b O ₂ Cl ^b	4-1463	Not Reported						23 376.	
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 509	4, 1, 3← 4, 0, 4	Ground					23 376.87	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	23 377.6	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1← 2, 2, 0	Ground		7/2		7/2	23 377.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 379.	.1
Cs ¹³³ Br ⁸¹	1-	11←10	Ground					23 379.53	0.10
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 380.3	1.
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	23 381.4	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	23 381.4	
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	3, 1, 2← 2, 1, 1	Excited		7/2		7/2	23 382.6	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	3, 1, 3← 2, 0, 2	Ground		9/2		7/2	23 382.73	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						23 383.04	.1
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	5, 4, 1← 5, 3, 2	Ground					23 383.7	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	3, 2, 2← 3, 0, 3	Ground					23 384.46	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3← 2, 0, 2	Ground					23 386.18	.2
2,4,6d ₃ -C ₆ ¹² H ₅ F ¹⁹	4-1284	10, 2, 8←10, 2, 9	Ground					23 386.2	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	3, 1, 3← 2, 0, 2	Ground		7/2		5/2	23 386.40	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 386.5	1.5
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1← 2, 2, 0	Excited		3/2		3/2	23 386.6	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1← 2, 2, 0	Excited		5/2		3/2	23 386.6	
HN ¹⁴ C ¹² S ³²	4- 311	2, 1, 2← 1, 1, 0	Ground					23 387.	
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 508	4, 1, 3← 4, 0, 4	Ground					23 388.31	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	3, 1, 3← 2, 0, 2	Ground		3/2		3/2	23 388.60	
HN ¹⁴ C ¹³ S ³²	4- 313	Not Reported	Ground					23 389.	
Cl ³⁷ C ¹² N ¹⁴	4- 173	2← 1	Ground	1/2		1/2		23 389.00	
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 389.3	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 1, 2← 1, 1, 1	Ground					23 389.50	.10
Cl ³⁷ C ¹² N ¹⁴	4- 173	2← 1	Ground	5/2	5/2	3/2	3/2	23 389.61	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 389.66	.1
Cl ³⁷ C ¹² N ¹⁴	4- 173	2← 1	Ground	7/2	9/2	5/2	7/2	23 390.53	
Cl ³⁷ C ¹² N ¹⁴	4- 173	2← 1	Ground	7/2	5/2	5/2	3/2	23 390.53	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 3, 5← 7, 3, 4	Ground		15/2		13/2	23 390.7	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 3, 5← 7, 3, 4	Ground		17/2		15/2	23 390.7	.1
H ₂ C ¹² :C ¹³ HCl ³⁵	4- 768	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	23 392.21	.10
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 3, 5← 7, 3, 4	Ground		19/2		17/2	23 392.6	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 3, 5← 7, 3, 4	Ground		13/2		11/2	23 392.6	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 393.	5.
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	Not Reported	Ground		3/2		3/2	23 393.4	
C ₆ ¹² H ₅ F ¹⁹	4-1281	5, 2, 3← 4, 2, 2	Ground					23 393.8	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 0, 1← 0, 0, 0	Ground					23 394.8	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						23 395.	10.
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 0, 1← 0, 0, 0	Ground					23 395.9	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	23 396.9	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	23 396.9	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Ground					23 397.06	.06

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	4, 0, 4← 3, 0, 3	Ground					23 397.48	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 400.0	1.5
s-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 395	6, 3, 3← 6, 3, 4	Ground					23 400.00	.2
C ¹³ H ₂ :C ¹³ HBr ⁷⁹	4- 733	Not Reported	Ground		7/2		7/2	23 400.4	.2
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	9, 3, 6← 9, 2, 7	Ground					23 401.52	.2
Cl ³⁷ C ¹² N ¹⁴	4- 173	2← 1	Ground	3/2	5/2	3/2	5/2	23 402.47	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	4, 3, 2← 4, 1, 3	Ground					23 402.53	
Si ²⁹ D ₃ Cl ³⁵	4-1445	2, ← 1,	Ground					23 402.6	.3
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	9, 3, 6← 9, 2, 7	Ground					23 403.71	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 405.	3.
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1← 2, 2, 0	Ground					23 406.34	.3
H ₂ C ¹² :C ¹³ HCl ³⁵	4- 768	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	23 406.72	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 406.8	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	23 407.5	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	23 407.5	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						23 408.54	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1← 2, 2, 0	Ground		3/2		3/2	23 409.0	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	23 409.0	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	15, 5, ←16, 4,	Ground					23 409.16	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	11, 8, 3←11, 8, 4	Ground					23 409.65	.1
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 1, 3← 2, 1, 2	Ground		7/2		7/2	23 410.1	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	10, 7, 3←10, 6, 4	Ground					23 411.49	.1
H ₂ C ^b *O ¹⁶ C ^b *H ₂ ^b	4- 846	Not Reported	Excited					23 412.0	.3
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						23 412.9	.5
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 2← 2, 2, 1	Ground		3/2		1/2	23 413.7	
S ³² O ₂ ¹⁶	4-1831	5, 2, 4← 6, 1, 5	Ground					23 414.33	.03
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 3, 1, 2	Ground		9/2		7/2	23 414.58	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 414.8	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					23 415.	5.
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	10, 7, 3←10, 6, 4	Ground					23 415.40	.1
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	8, 1, 7← 7, 1, 6	Ground					23 416.04	.05
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 2, 1← 3, 1, 3	Ground					23 417.65	.10
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 418.5	1.5
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 420.5	.1
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 1, 2← 2, 1, 1	Excited		9/2		7/2	23 420.7	
O ^b O ^b O ^b	4-1847	Not Reported						23 421.	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2← 2, 1, 1	Excited		3/2		3/2	23 421.1	.1
Ga ⁷¹ I ¹²⁷	1-	7← 6	Ground	19/2	11	17/2	10	23 421.95	0.20
Ga ⁷¹ I ¹²⁷	1-	7← 6	Ground	19/2	8	17/2	7	23 421.95	0.20
Ga ⁷¹ I ¹²⁷	1-	7← 6	Ground	17/2	9	15/2	8	23 421.95	0.20
Ga ⁷¹ I ¹²⁷	1-	7← 6	Ground	13/2	8	15/2	7	23 421.95	0.20
Ga ⁷¹ I ¹²⁷	1-	7← 6	Ground	15/2	9	13/2	8	23 421.95	0.20
Ga ⁷¹ I ¹²⁷	1-	7← 6	Ground	19/2	9	17/2	8	23 421.95	0.20
Ga ⁷¹ I ¹²⁷	1-	7← 6	Ground	19/2	10	17/2	9	23 421.95	0.20
Ga ⁷¹ I ¹²⁷	1-	7← 6	Ground	17/2	7	11/2	6	23 421.95	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
N ¹⁵ H ₃	4-1772	5, 5 ← 5, 5	Ground					23 421.99	.02
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 422.	3.
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 1 ← 2, 2, 0	Ground	3/2		1/2		23 422.25	
HN ¹⁴ C ¹² S ³²	4- 311	2, 1, 2 ← 1, 1, 1	Ground					23 424.5	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 424.70	.1
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	16, 2, 14 ← 17, 1, 17	Ground					23 425.	
Rb ⁸⁵ I ¹²⁷	1-	12 ← 11	Excited					23 425.51	0.10
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 426.	3.
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3 ← 2, 0, 2	Ground	3/2		3/2		23 426.2	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	5/2		5/2		23 426.7	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 427.	5.
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	1, 1, 0 ← 1, 0, 1	Ground					23 428.1	.2
H ₂ C ¹² :C ¹² Cl ³⁵	4- 661	12, 4, 8 ← 12, 3, 9	Ground					23 428.5	.5
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						23 428.83	.01
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 429.	3.
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	4, 2, 3 ← 3, 2, 2	Ground					23 429.2	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	15, 5, ← 16, 4,	Ground					23 429.42	.1
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	4, 1, 4 ← 3, 1, 3	Ground					23 429.48	.2
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	3, 2, 1 ← 3, 1, 3	Ground					23 429.85	.03
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3 ← 2, 1, 2	Ground	3/2		3/2		23 430.8	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3 ← 2, 1, 2	Ground	3/2		3/2		23 431.00	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 432.	.1
H ₂ C ^b *O ¹⁶ C ^b *H ₂ ^b	4- 846	Not Reported	Excited					23 432.6	.3
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 432.84	.1
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	6, 1, 5 ← 6, 0, 6	Excited					23 433.29	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	7, 0, 7 ← 6, 1, 6	Ground					23 434.2	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	7, 5, 2 ← 7, 5, 3	Ground					23 435.7	.3
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	4, 0, 4 ← 3, 1, 3	Excited					23 436.63	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2 ← 2, 1, 1	Ground	3/2		3/2		23 437.1	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3 ← 3, 1, 2	Ground	11/2		9/2		23 438.13	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	5, 2, 3 ← 5, 1, 4	Ground					23 438.25	.2
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 1, 2 ← 2, 1, 1	Ground	9/2		7/2		23 438.4	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	5, 4, 2 ← 5, 2, 3	Ground					23 440.06	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	4, 0, 4 ← 3, 1, 3	Ground					23 443.76	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 444.36	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					23 444.82	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 448.	5.
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 1, 2 ← 2, 1, 1	Ground					23 448.69	.08
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground					23 449.39	.1
C ₈ ¹² H ₁₃ Cl ³⁷	4-1342	11, ← 10,	Ground					23 449.6	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground					23 449.65	.1
C ¹² O ¹⁶ CF ³⁵ Cl ³⁷	4- 182	4, 3, 1 ← 4, 2, 2	Ground					23 449.9	.3
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					23 450.	5.
C ¹² DH ₂ C ¹² HDF ¹⁹	3- 562	1, 1, 0 ← 1, 0, 1	Ground					23 450.0	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground					23 450.17	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						23 450.31	.1
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	5, 1, 4← 4, 2, 3	Ground					23 451.0	.1
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	4, 0, 4← 3, 1, 3	Ground					23 451.09	
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						23 452.00	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	2, 0, 2← 1, 0, 1	Ground					23 453.13	
O ¹⁶ C ¹² S ³⁵	4- 524	2← 1	Ground	3/2		3/2		23 453.323	.011
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					23 454.6	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 455.	5.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		23 455.00	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Excited	9/2		7/2		23 455.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 456.	.1
O ¹⁶ C ¹² S ³⁵	4- 524	2← 1	Ground	7/2		5/2		23 456.963	.011
O ¹⁶ C ¹² S ³⁵	4- 524	2← 1	Ground	5/2		3/2		23 456.963	.011
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Ground	3/2		1/2		23 457.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					23 457.	5.
HN ¹⁴ C ¹² S ³²	4- 311	2, 0, 2← 1, 0, 1	Ground					23 458.	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 458.88	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	2, 0, 2← 1, 0, 1	Ground					23 459.49	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	8, 6, 2← 8, 6, 3	Excited					23 460.	
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	4, 2, 2← 3, 2, 1	Ground					23 460.52	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Ground	5/2		5/2		23 461.905	.01
O ¹⁶ C ¹² S ³⁵	4- 524	2← 1	Ground	3/2		1/2		23 462.343	.011
O ¹⁶ C ¹² S ³⁵	4- 524	2← 1	Ground	5/2		5/2		23 462.343	.011
C ¹³ H ₂ :C ¹² HBr ⁸¹	4- 736	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		23 462.6	
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 462.9	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 463.6	.1
HN ¹⁴ C ¹² S ³²	4- 311	2, , ← 1, ,	Ground					23 464.	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		23 464.6	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 2, 2← 3, 1, 3	Ground					23 465.32	.1
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	4, 1, 4← 3, 1, 3	Ground					23 466.80	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 3, 1, 2	Ground	13/2		11/2		23 467.01	
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹ .	3- 248	2, 0, 2← 1, 0, 1	Ground					23 467.05	.1
Ge ⁷⁶ H ₃ Br ⁷⁹	4- 107	5, ← 4,	Ground					23 468.0	1.
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		23 468.6	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		23 468.6	
HO ¹⁸	1-	9/2, 4← 9/2, 4	Ground	4		4		23 469.5	.5
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	4, 3, 1← 3, 3, 0	Ground					23 469.59	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 470.	
C ¹² H ₃ P ³¹ H ₂	3- 271	1, 0, 1← 0, 0, 0	Ground					23 470.3	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		23 470.9	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		23 470.9	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					23 470.99	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 471.	3.
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 1, 1	Ground	5/2		3/2		23 471.334	.01
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 2, 2← 3, 1, 3	Ground					23 472.10	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2 $\leftarrow$ 2, 1, 1	Ground		5/2		5/2	23 473.3	.2
Ge ⁷⁴ H ₃ Br ⁸¹	4- 106	5, $\leftarrow$ 4,	Ground					23 474.75	1.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3 $\leftarrow$ 3, 1, 2	Ground		5/2		3/2	23 474.88	
HN ¹⁴ C ¹² S ³²	4- 311	2, 0, $\leftarrow$ 1, 0,	Excited					23 475.	.5
(C ¹² H ₃) ₃ C ¹² N ¹⁴ C ¹²	3-1032	4, $\leftarrow$ 3,	Ground					23 475.4	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1 $\leftarrow$ 2, 2, 0	Ground		5/2		5/2	23 478.2	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 2, 1 $\leftarrow$ 2, 2, 0	Ground		7/2		5/2	23 478.2	
HO ¹⁸	1-	9/2, 4 $\leftarrow$ 9/2, 4	Ground		5		5	23 479.1	.5
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground					23 479.26	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3 $\leftarrow$ 2, 1, 2	Excited		7/2		5/2	23 480.00	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2 $\leftarrow$ 2, 1, 1	Ground		9/2		7/2	23 480.75	.1
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , $\leftarrow$ 2, ,	Ground					23 481.6	.2
HDO ¹⁷	4-1714	3, , $\leftarrow$ 2, ,	Ground					23 481.6	.05
C ¹² _* H:C ¹² HO ¹⁶ C ¹² D:C ¹² _* H	4-1154	11,10, 1 $\leftarrow$ 11, 9, 2	Ground					23 481.7	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 0, 3 $\leftarrow$ 2, 0, 2	Ground		7/2		7/2	23 481.7	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0 $\leftarrow$ 1, 0	Excited		5/2		5/2	23 482.	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3 $\leftarrow$ 2, 1, 2	Ground		9/2		7/2	23 482.5	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		9/2		7/2	23 482.6	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 483.	5.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3 $\leftarrow$ 2, 1, 2	Ground		3/2		1/2	23 483.90	
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	4, 1, 3 $\leftarrow$ 4, 0, 4	Excited					23 485.96	.05
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					23 487.11	.2
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	8, 2, 6 $\leftarrow$ 8, 1, 7	Ground					23 487.74	.2
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2 $\leftarrow$ 2, 1, 1	Excited		7/2		5/2	23 488.3	.2
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	6, 1, 5 $\leftarrow$ 6, 0, 6	Ground					23 488.36	.1
C ¹² _* H ₂ C ¹² HDC ¹² H O ¹⁶ _*	4-1094	3, 1, 2 $\leftarrow$ 3, 1, 3	Ground					23 488.5	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	7, 6, 2 $\leftarrow$ 7, 5, 3	Ground					23 490.64	.05
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2 $\leftarrow$ 2, 1, 1	Ground					23 490.67	.07
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 3, 5 $\leftarrow$ 8, 2, 6	Ground					23 491.24	.03
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1 $\leftarrow$ 1, 1	Ground		3/2		3/2	23 492.423	.01
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	8, 2, 6 $\leftarrow$ 8, 1, 7	Ground					23 492.79	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3 $\leftarrow$ 2, 0, 2	Excited		9/2		7/2	23 493.0	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3 $\leftarrow$ 2, 0, 2	Excited		7/2		5/2	23 493.0	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3 $\leftarrow$ 2, 1, 2	Ground					23 493.15	.04
C ¹² _* H:C ¹² HO ¹⁸ C ¹² H:C ¹² _* H	4-1152	5, 4, 2 $\leftarrow$ 5, 2, 3	Ground					23 494.4	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					23 494.4	.1
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	5, 4, 1 $\leftarrow$ 5, 3, 2	Ground					23 494.8	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground		9/2		7/2	23 498.6	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground		7/2		7/2	23 498.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	1, 1, 1 $\leftarrow$ 0, 0, 0	Ground					23 498.82	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 499.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 499.	5.
HN ¹⁴ C ¹² S ³²	4- 311	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground					23 499.5	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1 $\leftarrow$ 1, 1	Ground		5/2		5/2	23 500.834	.01
C ¹³ H ₂ F ₂ ¹⁹	4- 352	3, 0, 3 $\leftarrow$ 2, 1, 2	Ground					23 501.2	.4

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
O ^b O ^b O ^b	4-1847	Not Reported						23 502.	
Cs ¹³³ Br ⁷⁹	1-	11←10	Excited					23 502.95	0.20
Rb ⁸⁵ I ¹²⁷	1-	12←11	Excited					23 503.98	0.10
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	23 504.4	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported						23 504.5	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 506.65	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		7/2		5/2	23 507.0	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	23 507.1	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	6, 5, 2← 6, 3, 3	Ground					23 507.71	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	23 508.1	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 1← 2, 2, 0	Ground		7/2		7/2	23 508.1	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	23 508.45	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		5/2		3/2	23 508.5	.2
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 2, 1						23 509.	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	3, 2, 2← 3, 1, 3	Ground					23 509.02	.1
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 511.53	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	6, 5, 2← 6, 3, 3	Ground					23 511.9	.1
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 1, 1	Excited	3/2		3/2		23 513.	
s-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 395	12, 7, 5←12, 7, 6	Ground					23 513.4	.2
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Ground	1/2		1/2		23 515.865	.01
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	23 516.0	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	23 516.0	
C ¹² D ₂ Cl ³⁵ S ²⁸ H ₃	3- 235	4, 1, 4← 3, 1, 3	Ground					23 519.83	.2
HN ¹⁴ C ¹² S ³²	4- 311	2, 1, 1← 1, 1, 0	Excited					23 520.	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					23 520.4	.1
C ¹² H ₂ C ¹³⁷ C ¹² :C ¹² H	4- 992	4, 1, 3← 3, 1, 2	Ground					23 520.91	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Ground	7/2		5/2		23 520.965	.01
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Ground	5/2		3/2		23 520.965	.01
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Excited	5/2		3/2		23 521.	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Excited	7/2		5/2		23 521.	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Excited		3/2		3/2	23 522.4	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3← 2, 0, 2	Ground					23 523.62	.08
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3← 2, 0, 2	Excited		5/2		3/2	23 524.3	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3← 2, 0, 2	Excited		3/2		1/2	23 524.3	
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 1← 1, 1, 0	Ground		5/2		3/2	23 524.30	.02
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	10, 7, 3←10, 6, 4	Ground					23 524.40	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	7, 7, 1← 7, 6, 2	Ground					23 524.94	.05
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 771	5, 1, 4← 4, 1, 3	Ground					23 525.21	.2
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	7, 7, 1← 7, 6, 2	Ground					23 525.58	
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 526.1	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 8, ←12, 7,	Ground					23 526.15	.1
C ¹² H ₃ S ³² H	3- 221	9, 1, 8← 9, 1, 9	Ground					23 526.2	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 8, ←12, 7,	Ground					23 527.00	.1
(C ¹² H ₃) ₂ S ³²	3- 601	1, 1, 1← 0, 0, 0	Ground					23 527.26	.05
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	5, 1, 4← 4, 2, 3	Ground					23 527.46	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
(C ¹² H ₃) ₂ S ³²	3- 601	1, 1, 1← 0, 0, 0	Ground					23 527.50	.05
(C ¹² H ₃) ₂ S ³²	3- 601	1, 1, 1← 0, 0, 0	Ground					23 527.60	.05
(C ¹² H ₃) ₂ S ³²	3- 601	1, 1, 1← 0, 0, 0	Ground					23 527.73	.05
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 1← 1, 1, 0	Ground		3/2		3/2	23 528.86	.02
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 529.	5.
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	5, 1, 4← 4, 2, 3	Ground					23 529.29	.2
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	2, 0, 2← 1, 0, 1	Ground					23 530.00	.10
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 1, 1	Ground		7/2		5/2	23 530.318	.01
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	4, 3, 2← 4, 2, 3	Ground					23 530.7	1.
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 1, 1	Excited		7/2		5/2	23 531.	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 1, 2← 1, 1, 1	Ground					23 531.00	.10
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Excited		7/2		7/2	23 531.40	
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 1← 1, 1, 0	Ground		5/2		5/2	23 532.19	.02
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 2← 2, 2, 1	Ground					23 532.93	.06
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	23 533.0	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	23 533.0	
O ¹⁷ C ¹² S ₂ ³²	4- 529	2← 1	Ground		5/2		3/2	23 534.101	.014
O ¹⁷ C ¹² S ₂ ³²	4- 529	2← 1	Ground		7/2		7/2	23 534.164	.012
O ¹⁷ C ¹² S ₂ ³²	4- 529	2← 1	Ground		1/2		3/2	23 534.308	.012
O ¹⁷ C ¹² S ₂ ³²	4- 529	2← 1	Ground		9/2		7/2	23 534.422	
O ¹⁷ C ¹² S ₂ ³²	4- 529	2← 1	Ground		7/2		5/2	23 534.422	
O ¹⁷ C ¹² S ₂ ³²	4- 529	2← 1	Ground		3/2		3/2	23 534.481	.014
O ¹⁷ C ¹² S ₂ ³²	4- 529	2← 1	Ground		5/2		5/2	23 534.481	.014
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	2, 0, 2← 1, 0, 1	Ground					23 536.25	.10
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	8, 2, 6← 8, 1, 7	Ground					23 536.65	.2
HN ¹⁴ C ¹² S ₂ ³²	4- 311	2, 1, 1← 1, 1, 1	Ground					23 537.	
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	23 538.58	.02
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 663	Not Reported	Ground					23 539.4	.5
C ¹² H ₃ C ¹² O ¹⁶ H	3- 491	3, 1, 2← 3, 0, 3	Ground					23 540.87	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	8, 2, 6← 8, 1, 7	Ground					23 541.99	.2
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	8, 1, 7← 8, 0, 8	Ground		13/2		13/2	23 542.4	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 1← 2, 2, 0	Ground					23 542.70	.06
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	23 542.9	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 1← 2, 2, 0	Ground		3/2		3/2	23 542.9	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Excited		5/2		3/2	23 543.	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Excited		7/2		5/2	23 543.	
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 1← 1, 1, 0	Ground		3/2		1/2	23 543.09	.02
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	8, 1, 7← 8, 0, 8	Ground		19/2		19/2	23 543.7	.1
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 1, 1	Ground		3/2		1/2	23 545.596	.015
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	8, 1, 7← 8, 0, 8	Ground					23 546.17	.2
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 2, 2← 2, 2, 1	Ground		3/2		1/2	23 546.5	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	23 546.8	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	23 546.8	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	3, 1, 2← 2, 1, 1	Ground		7/2		7/2	23 547.7	.2
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 547.9	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₂ C ¹² :C ¹² HCl ³⁵	4- 766	2, 1, 1← 1, 1, 0	Ground		1/2		1/2	23 549.45	.02
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Excited		3/2		3/2	23 549.5	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	8, 1, 7← 8, 0, 8	Ground		17/2		17/2	23 549.7	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground		3/2		3/2	23 549.8	.2
Si ³⁰ H ₃ N ¹⁴ C ¹² S ³²	4- 495	8, ← 7,	Ground					23 550.43	
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	4, 1, 3← 4, 0, 4	Ground					23 550.84	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	14, 4,10←14, 4,11	Ground					23 551.	5.
O ^b O ^b O ^b	4-1847	Not Reported						23 552.	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 1, 1	Excited		7/2		5/2	23 553.	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						23 553.26	
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1181	12,11, 2←12, 9, 3	Ground					23 553.9	
C ₆ H ₅ Cl ³⁵	4-1271	8, 2, 6← 7, 2, 5	Ground					23 554.7	
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						23 555.	
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	2, 0, 2← 1, 0, 1	Ground					23 556.56	.10
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 558.5	1.5
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 0, 3← 2, 0, 2	Ground		3/2		3/2	23 558.9	
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						23 560.0	10.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Ground		7/2		7/2	23 560.3	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 3← 2, 1, 2	Ground		7/2		7/2	23 560.4	
H ₂ C ^b *O ¹⁶ C ^b *H ₂ ^b	4- 846	Not Reported	Excited					23 561.1	.3
D ₂ C ¹² :C ¹² F ₂ ⁹	4- 683	2, 1, 2← 1, 1, 1	Ground					23 561.7	.3
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	4, 1, 3← 4, 0, 4	Ground					23 562.38	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 563.2	.1
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Ground		3/2		3/2	23 563.222	.01
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	4, 0, 4← 3, 1, 3	Ground					23 563.25	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Ground		3/2		3/2	23 565.7	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	6, 5, 2← 6, 4, 3	Ground					23 565.7	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					23 566.6	.1
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 1, 2← 2, 1, 1	Ground		5/2		5/2	23 566.7	
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	8, 2, 6← 8, 1, 7	Ground					23 568.45	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Excited		5/2		5/2	23 570.4	
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	8, 2, 6← 8, 1, 7	Ground					23 570.53	
D ₂ O ₂ ⁶	3- 42	Not Reported						23 571.	3.
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³⁴	4- 496	8, ← 7,	Ground					23 573.42	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 574.	3.
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 1, 1	Ground		1/2		1/2	23 575.	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		9/2		7/2	23 576.1	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 577.0	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						23 577.38	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						23 581.5	.3
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ C ¹² Cl ³⁷	3- 774	5, 2, 3← 5, 1, 4	Ground					23 581.92	.2
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	12, 7, 6←12, 7, 5	Ground					23 583.7	
Cs ¹³³ Br ⁷⁹	1-	11←10	Excited					23 583.87	0.20
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Excited		3/2		3/2	23 584.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ₆ H ₅ Cl ³⁵	4-1271	9, 0, 9← 8, 0, 8	Ground					23 584.	5.0
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Excited	9/2	7/2			23 584.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Excited	9/2	7/2			23 585.4	
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , ← 2, ,	Ground					23 585.6	.1
HDO ¹⁷	4-1714	3, , ← 2, ,	Ground					23 585.6	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 587.	5.
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 0, 3← 2, 0, 2	Ground	5/2	5/2			23 587.1	
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 1, 2← 2, 1, 1	Ground					23 588.28	.06
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 0, 2← 1, 1, 1	Ground					23 589.01	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 0, 2← 1, 1, 1	Ground					23 589.65	.1
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -E	3- 198	12, 7, 6←12, 7, 5	Ground					23 589.7	
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	6, 1, 5← 6, 0, 6	Ground					23 590.	5.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 591.	.1
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	2, 0, 2← 1, 0, 1	Ground					23 591.48	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	3, 1, 3← 2, 0, 2	Ground					23 591.75	
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	2, 0, 2← 1, 0, 1	Ground					23 593.08	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	36,18, ←35,19,	Ground					23 593.09	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Excited	5/2	5/2			23 593.4	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	36,18, ←35,19,	Ground					23 593.50	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 594.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	36,18, ←35,19,	Ground					23 594.05	.1
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 1← 1, 1	Excited	1/2	1/2			23 595.	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground	5/2	5/2			23 597.55	
C ₆ H ₅ O ¹⁶ H	3-1051	6, 1, 6← 5, 0, 5	Ground					23 598.90	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 601.5	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Excited	9/2	7/2			23 601.7	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 601.78	.1
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	6, 5, 2← 6, 4, 3	Ground					23 602.5	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						23 602.58	.1
HC ¹³ N ¹⁴	4- 293	10←10	Excited					23 602.60	.1
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 603.	5.
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 1, 2← 2, 1, 1	Ground	7/2	5/2			23 604.9	
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						23 605.	
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	8, 2, 6← 8, 1, 7	Ground					23 607.22	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 608.52	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Ground	5/2	5/2			23 609.6	.2
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	3, 2, 1← 3, 1, 2	Ground					23 610.38	.03
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 611.04	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground	9/2	7/2			23 611.6	
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 611.7	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						23 612.9	.5
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	8, 2, 6← 8, 1, 7	Ground					23 612.92	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 613.	5.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground	3/2	1/2			23 613.0	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Excited		5/2		3/2	23 615.6	
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	23 617.0	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					23 617.3	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Ground		9/2		7/2	23 617.9	.2
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 618.6	1.5
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	23 618.7	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 2← 2, 2, 1	Ground		5/2		5/2	23 618.7	
C ¹² H ₂ DC ¹² HDF ¹⁹	3- 557	6, 1, 5← 6, 1, 6	Ground					23 618.7	.1
C ¹² _* H:C ¹² HO ¹⁶ C ¹² H:C ¹² _* H	4-1151	7, 6, 2← 7, 4, 3	Ground					23 619.06	
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	14, 5, 9←14, 4,11	Ground					23 620.1	.3
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁷	4- 672	11, 2, 9←11, 1,10	Ground					23 620.5	1.
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 0, 2← 1, 1, 1	Ground					23 621.03	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	23 622.1	
As ⁷⁵ F ₃ ¹⁹	4- 21	2, 0← 1, 0	Ground		1/2		3/2	23 622.2	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 623.	3.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground					23 624.28	.04
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 624.43	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 625.64	.1
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	6, 1, 5← 6, 1, 6	Ground					23 626.60	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁷	3- 972	4, ← 3,	Ground					23 627.3	.3
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 1← 2, 2, 0	Ground		5/2		5/2	23 628.5	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	23 628.5	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Excited		7/2		5/2	23 629.8	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Ground					23 629.80	.06
Si ²⁸ H ₂ DN ¹⁴ C ¹² S ³²	4- 497	8, 1, ← 7, 1,	Ground					23 630.62	.1
C ¹² _* H ₂ N ¹⁴ HC ¹² _* H ₂	4- 861	2, 1, 1← 2, 0, 2	Ground					23 632.9	.5
Si ²⁸ H ₂ DN ¹⁴ C ¹² S ³²	4- 497	8, 7, ← 7, 7,	Ground					23 633.38	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	23 634.0	
C ¹² _* H ₂ N ¹⁴ HC ¹² _* H ₂	4- 861	2, 1, 1← 2, 0, 2	Ground					23 634.41	.1
Cl ³⁶ C ¹² N ¹⁴	4- 175	2← 1	Ground					23 635.	
C ¹² D ₃ C ¹³ :C ¹² Cl ³⁵	4- 979	6, 0← 5, 0	Ground		13/2		11/2	23 635.45	.04
C ¹² D ₃ C ¹³ :C ¹² Cl ³⁵	4- 979	6, 0← 5, 0	Ground		15/2		13/2	23 635.45	.04
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 1, 4← 3, 0, 3	Ground					23 637.1	.3
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 637.19	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 638.	.1
C ¹² _* H ₂ N ¹⁴ DC ¹² _* H ₂	4- 862	2, 2, 1← 2, 0, 2	Ground					23 638.6	.5
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 0, 3← 2, 0, 2	Ground					23 638.68	.10
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	23 640.65	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	23 640.7	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported						23 640.8	.2
C ₆ H ₅ F ¹⁹	4-1281	Not Reported						23 642.	5.
Si ²⁸ H ₂ DN ¹⁴ C ¹² S ³²	4- 497	8, 6, ← 7, 6,	Ground					23 642.29	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	23 642.50	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 643.3	1.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	2, 2, 1← 2, 0, 2	Ground					23 643.6	.5
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D	3- 506	2, 0, 2← 1, 0, 1	Ground					23 644.75	.2
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	9, 1, 8← 9, 0, 9	Ground					23 645.34	
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 2, 2← 2, 2, 1	Ground					23 645.38	.06
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	23 646.3	.1
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , ← 2, ,	Ground					23 646.3	.2
HDO ¹⁷	4-1714	3, , ← 2, ,	Ground					23 646.3	.05
O ¹⁶ C ¹³ S ³⁴	4- 527	2← 1	Ground					23 646.92	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 647.1	.3
C ¹² DHDC ¹² HDF ¹⁹	3- 561	3, 1, 2← 3, 0, 3	Ground					23 647.6	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 1, 2← 1, 1, 1	Ground					23 648.	3.
Si ²⁸ H ₂ DN ¹⁴ C ¹² S ³²	4- 497	8, 5, ← 7, 5,	Ground					23 649.25	.1
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	23 650.7	
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 2, 1← 2, 2, 0	Ground					23 650.76	.06
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 652.02	
S ³² *HC ¹² :C ¹² HCC ¹² H:C ¹² *H	4-1161	11, 5, 7←11, 5, 6	Ground					23 652.9	.1
Si ²⁸ H ₂ DN ¹⁴ C ¹² S ³²	4- 497	8, 4, ← 7, 4,	Ground					23 655.15	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 656.	5.
N ¹⁴ H ₃	4-1771	9, 8← 9, 8	Ground					23 657.48	.02
C ¹³ H ₂ :C ¹² HBr ⁷⁹	4- 735	3, 1, 2← 2, 1, 1	Ground		7/2		7/2	23 658.3	
Si ²⁸ H ₂ DN ¹⁴ C ¹² S ³²	4- 497	8, 3, ← 7, 3,	Ground					23 659.41	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					23 660.0	1.5
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 661.	5.
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 661.	5.
O ¹⁶ C ¹² S ³⁴	4- 523	2← 1	Ground					23 661.	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	3, 1, 3← 2, 0, 2	Ground		3/2		1/2	23 662.10	
Si ²⁸ H ₂ DN ¹⁴ C ¹² S ³²	4- 497	8, 2, ← 7, 2,	Ground					23 662.43	.1
Cs ¹³³ Br ⁷⁹	1-	11←10	Excited					23 665.60	0.20
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						23 665.7	.5
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	3, 1, 3← 2, 0, 2	Ground		5/2		3/2	23 666.35	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	3, 1, 3← 2, 0, 2	Ground		9/2		7/2	23 667.22	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 667.9	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 668.03	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	12, 5, 8←11, 6, 5	Ground					23 668.22	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 670.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	12, 5, 8←11, 6, 5	Ground					23 670.17	.1
Si ²⁸ D ₃ Cl ³⁵	4-1444	2, ← 1,	Ground					23 670.8	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	3, 1, 3← 2, 0, 2	Ground		7/2		5/2	23 671.50	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	12, 5, 8←11, 6, 5	Ground					23 672.94	.1
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					23 674.33	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	3, 1, 3← 2, 0, 2	Ground		3/2		3/2	23 674.50	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	8, 1, 7← 8, 0, 8	Ground					23 674.57	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	12, 5, 7←11, 6, 6	Ground					23 679.29	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 680.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	12, 5, 7←11, 6, 6	Ground					23 680.51	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ N ¹⁴ H ₂	3- 261	11, 4, ←12, 3,	Ground		23 683.17	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	12, 5, 7←11, 6, 6	Ground		23 683.96	.1
C ¹² D ₃ C ¹² HDC ¹² N ¹⁴	3- 733	3, 0, 3← 2, 0, 2	Ground		23 684.68	.1
C ₆ H ₅ Br ^b	4-1261	Not Reported			23 690.	5.
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	8, 1, 7← 8, 0, 8	Ground		23 692.14	.2
D ₂ O ₂ ⁶	3- 42	Not Reported			23 694.	3.
N ¹⁴ H ₃	4-1771	1, 1← 1, 1	Ground		23 694.49	.02
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	3, 1, 2← 2, 1, 1	Ground	7/2 7/2	23 697.6	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		23 698.3	.2
Si ²⁸ H ₂ DN ¹⁴ C ¹² S ³²	4- 497	8, 1, ← 7, 1,	Ground		23 698.48	.1
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	19/2 11 17/2 10	23 698.78	0.30
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	13/2 8 15/2 7	23 698.78	0.30
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	19/2 8 17/2 7	23 698.78	0.30
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	17/2 9 15/2 8	23 698.78	0.30
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	19/2 10 17/2 9	23 698.78	0.30
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	19/2 9 17/2 8	23 698.78	0.30
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	15/2 9 13/2 8	23 698.78	0.30
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	17/2 7 11/2 6	23 698.78	0.30
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		23 700.01	
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground		23 701.45	
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	3, 2, 2← 2, 2, 1	Ground		23 701.5	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported			23 703.	3.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported			23 703.	1.
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	6, 3, 4← 6, 2, 4	Ground	9/2 9/2	23 704.6	.05
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground	7/2 7/2	23 704.8	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 3← 2, 1, 2	Ground	7/2 7/2	23 704.9	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	6, 3, 4← 6, 2, 4	Ground	15/2 15/2	23 705.8	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		23 706.	5.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 0, 3← 2, 0, 2	Ground		23 706.45	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	6, 3, 4← 6, 2, 4	Ground		23 708.20	.02
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 3, 5← 8, 2, 6	Ground		23 709.41	.03
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	6, 3, 4← 6, 2, 4	Ground	11/2 11/2	23 710.0	.05
C ₆ H ₅ O ¹⁶ H	3-1051	6, 1, 6← 5, 0, 5	Ground		23 710.65	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	5, 0, 5← 4, 1, 4	Ground		23 710.80	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported			23 711.04	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	8, 2, 6← 8, 1, 7	Ground		23 711.10	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	6, 3, 4← 6, 2, 4	Ground	13/2 13/2	23 711.4	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 1, 2← 1, 1, 1	Excited		23 713.	3.
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 2, 2← 2, 2, 1	Ground	7/2 5/2	23 716.1	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	8, 2, 6← 8, 1, 7	Ground		23 716.83	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported			23 717.	3.
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	10, 8, 3←10, 7, 3	Ground		23 717.	5.
C ¹² D ₃ C ¹³ O ¹⁶ F ¹⁹	3- 401	2, 0, 2← 1, 1, 1	Ground		23 717.18	.2
C ¹² D ₃ C ¹² HDC ¹² N ¹⁴	3- 733	3, 2, 2← 2, 2, 1	Ground		23 719.06	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			23 720.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	7/2	5/2			23 721.3	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ⁶	3- 181	3, 0, 3← 2, 0, 2	Ground					23 721.64	.1
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	2, 0, 2← 1, 0, 1	Ground					23 722.63	.2
N ¹⁴ H ₃	4-1771	2, 2← 2, 2	Ground					23 722.63	.02
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 723.0	.1
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	6, 2, 4← 6, 2, 5	Ground					23 724.5	.05
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	4, 1, 4← 3, 1, 3	Ground					23 726.51	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						23 727.50	1.
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	5, 1, 4← 5, 0, 5	Ground					23 727.87	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	11, 4, 8←11, 3, 8	Ground	19/2	19/2			23 728.2	.05
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	11, 4, 8←11, 3, 8	Ground	25/2	25/2			23 728.6	.05
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -E	3- 512	2, 0, 2← 1, 0, 1	Ground					23 729.67	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	11, 4, 8←11, 3, 8	Ground	21/2	21/2			23 731.0	.05
O ¹⁶ C ¹² S ³⁴	4- 523	2← 1	Ground					23 731.299	.003
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	11, 4, 8←11, 3, 8	Ground	23/2	23/2			23 731.4	.05
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -A	3- 511	2, 0, 2← 1, 0, 1	Ground					23 731.54	.2
S ³² O ₂ ¹⁶	4-1831	Not Reported						23 733.03	.1
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	3, 1, 3← 2, 0, 2	Ground					23 733.95	.2
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	10, 8, 3←10, 6, 4	Ground					23 734.0	.1
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 5← 5, 5	Ground	13/2	11/2			23 734.10	.04
C ¹² H ₃ C ¹² Cl ₃ ³⁵	3- 381	5, ← 4,	Ground					23 735.	10.
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	6, 3, 3← 6, 2, 4	Ground					23 737.50	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 738.2	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	7, 0, 7← 6, 1, 6	Ground					23 738.22	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	7, 6, 2← 7, 5, 3	Ground					23 740.3	.1
C ¹² *H ₂ C ¹² D:C ¹² *H	4-1032	2, 1, 1← 2, 1, 2	Ground					23 741.6	
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 4← 5, 4	Ground	11/2	9/2			23 741.70	.04
C ₆ ¹² H ₅ Br ^b	4-1261	Not Reported						23 742.	5.
C ¹² HDCI ³⁵ Si ²⁸ H ₃	3- 236	9, 1, 8← 9, 0, 9	Ground					23 742.34	.2
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 3← 5, 3	Ground	13/2	11/2			23 742.85	.04
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	6, 1, 5← 6, 0, 6	Ground					23 743.20	.1
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					23 743.5	.3
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 3← 5, 3	Ground	11/2	9/2			23 743.97	.04
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	7, 3, 5← 7, 3, 4	Ground					23 744.20	
C ¹² D ₃ C ¹² HDC ¹² N ¹⁴	3- 733	3, 2, 1← 2, 2, 0	Ground					23 745.08	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	7, 3, 5← 7, 3, 4	Ground					23 745.10	
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 2← 5, 2	Ground	11/2	9/2			23 745.59	.04
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 2← 5, 2	Ground	13/2	11/2			23 745.59	.04
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 746.16	
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 1← 5, 1	Ground	11/2	9/2			23 746.52	.04
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 0← 5, 0	Ground	11/2	9/2			23 746.85	.04
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 0← 5, 0	Ground	9/2	7/2			23 746.85	.04
C ₈ ¹³³ Br ⁷⁹	1-	11←10	Ground					23 747.17	0.10
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 0← 5, 0	Ground	13/2	11/2			23 747.77	.04
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 0← 5, 0	Ground	15/2	13/2			23 747.77	.04

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 749.	5.
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 3← 5, 3	Ground		9/2		7/2	23 749.07	.04
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	23 749.5	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					23 750.0	.5
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 4← 5, 4	Ground		9/2		7/2	23 750.78	.04
C ¹² D ₃ C ¹² :C ¹² Cl ³⁵	4- 973	6, 5← 5, 5	Ground		9/2		7/2	23 753.03	.04
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 754.	5.
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	23 754.6	
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					23 754.6	1.5
Ge ⁷⁴ H ₃ Br ⁷⁹	4- 105	5, ← 4,	Ground					23 758.99	1.
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground					23 759.	
Cl ³⁵ C ¹³ N ¹⁴	4- 172	2← 1	Ground	7/2	9/2	5/2	7/2	23 760.98	
C ¹² D ₂ Cl ₂ ³⁵	4- 346	6, 1, 5← 6, 0, 6	Ground					23 761.	5.
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					23 765.13	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 767.	5.
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	9, 1, 8← 8, 3, 5	Ground					23 769.	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 769.5	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 770.5	.3
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	23 770.8	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						23 771.02	
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 772.6	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					23 773.8	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 775.	5.
C ¹² H ₅ Cl ³⁵	4-1271	Not Reported	Ground					23 775.4	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 1, 9← 8, 1, 8	Ground		21/2		19/2	23 775.6	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 1, 9← 8, 1, 8	Ground		17/2		15/2	23 775.6	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 1, 9← 8, 1, 8	Ground		19/2		17/2	23 775.6	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 1, 9← 8, 1, 8	Ground		15/2		13/2	23 775.6	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	8, 1, 7← 8, 0, 8	Ground		19/2		19/2	23 776.2	.1
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 0, 3← 2, 0, 2	Ground					23 776.36	.09
N ¹⁴ H ₃	4-1771	16,14←16,14	Ground					23 777.4	.1
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 778.	5.
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	19/2	11	17/2	10	23 778.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	19/2	10	17/2	9	23 778.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	19/2	9	17/2	8	23 778.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	19/2	8	17/2	7	23 778.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	17/2	9	15/2	8	23 778.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	13/2	8	15/2	7	23 778.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	15/2	9	13/2	8	23 778.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Excited	17/2	7	11/2	6	23 778.29	0.20
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	8, 1, 7← 8, 0, 8	Ground					23 779.57	.2
Ge ⁷² H ₃ Br ⁸¹	4- 104	5, ← 4,	Ground					23 780.11	1.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 780.5	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	16,14, 3←16,12, 4	Ground					23 781.4	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 782.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	8, 1, 7← 8, 0, 8	Ground	17/2		17/2		23 782.8	.1
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 2, 2← 2, 2, 1	Ground					23 783.36	.08
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	3, 3, 1← 3, 1, 2	Ground					23 784.8	.5
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 787.68	.1
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	3, 3, 1← 3, 1, 2	Ground					23 787.8	.5
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 2, 1← 2, 2, 0	Ground					23 788.66	.06
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					23 788.8	.3
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		23 788.9	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	5, 4, 2← 5, 2, 3	Ground					23 790.0	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	8, 7, 2← 8, 5, 3	Ground					23 790.73	
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 793.	5.
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	2, 0, 2← 1, 0, 1	Ground					23 794.44	.10
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 1, 2← 1, 1, 1	Ground					23 795.23	.1
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	5, 1, 4← 5, 0, 5	Ground	7/2		7/2		23 795.5	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	5, 1, 4← 5, 0, 5	Ground	13/2		13/2		23 796.68	.05
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	10, 4, 6←10, 3, 7	Ground					23 796.8	.5
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 797.3	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 798.	5.
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	5, 1, 4← 5, 0, 5	Ground					23 798.30	.05
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	8, 4, 4← 8, 3, 5	Ground					23 798.49	.2
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	5, 1, 4← 5, 0, 5	Ground	9/2		9/2		23 799.7	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 2← 2, 0, 2	Ground	5/2		3/2		23 799.7	.2
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	5, 1, 4← 5, 0, 5	Ground	11/2		11/2		23 800.9	.05
C ¹² H ₃ S ³² H	3- 221	12, 1, ←11, 2,	Ground					23 801.8	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 803.5	.1
HO ¹⁶	1-	9/2, 4← 9/2, 4	Ground	4		5		23 806.5	.5
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 809.	3.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 812.	5.
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 813.	3.
HN ₃ ¹⁴	4-1701	1, 0, 1← 0, 0, 0	Ground	0	1	1	1	23 813.28	.05
HN ¹⁴ N ¹⁵ N ¹⁴	4-1705	1, 0, 1← 0, 0, 0	Ground					23 814.	
C ₆ H ₅ O ¹⁶ H	3-1051	5, 4, 2← 5, 3, 3	Ground					23 814.0	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 814.4	.3
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 814.64	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 3, 5← 8, 2, 6	Excited					23 814.66	.03
HN ₃ ¹⁴	4-1701	1, 0, 1← 0, 0, 0	Ground	2	2	1	2	23 815.19	.05
HN ₃ ¹⁴	4-1701	1, 0, 1← 0, 0, 0	Ground	2	3	1	3	23 815.56	.05
HN ₃ ¹⁴	4-1701	1, 0, 1← 0, 0, 0	Ground					23 815.7	
HN ₃ ¹⁴	4-1701	1, 0, 1← 0, 0, 0	Ground	1	0	1	0	23 816.56	.05
HN ₃ ¹⁴	4-1701	1, 0, 1← 0, 0, 0	Ground	1	2	1	2	23 81 .87	.05
HN ₃ ¹⁴	4-1701	1, 0, 1← 0, 0, 0	Ground	1	1	1	1	23 817.17	.05
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					23 818.0	.3
HO ¹⁶	1-	9/2, 4← 9/2, 4	Ground	4		4		23 818.18	.05
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 818.8	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 819.	3.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² _* HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ _*	4-1201	17,13, 4←17,13, 5	Ground					23 820.8	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 1, 2← 1, 1, 1	Ground					23 822.91	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 825.5	.1
c-HDC ¹² :C ¹² DF ¹⁹	4- 789	5, 1, 4← 5, 1, 5	Ground					23 826.7	.1
HO ¹⁶	1-	9/2, 4← 9/2, 4	Ground	5		5		23 826.90	.05
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 827.	5.
S ³² _* HC ¹² :C ¹² DC ¹² D:C ¹² _* H	4-1164	8, 3, 6← 8, 3, 5	Ground					23 827.0	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ¹⁶	3- 181	3, 0, 3← 2, 0, 2	Ground					23 829.45	.1
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	4, 1, 3← 4, 0, 4	Ground					23 829.80	.2
C ¹² D ₃ I ¹²⁷	4- 482	2, 0← 1, 0	Ground	7/2		7/2		23 831.16	.08
C ¹² H ₃ O ¹⁶ N ¹⁴ O ¹⁶	3- 181	3, 0, 3← 2, 0, 2	Ground					23 834.15	.1
C ¹² H ₂ DC ¹² HDF ¹⁹	3- 557	3, 1, 2← 3, 0, 3	Ground					23 837.4	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ¹⁶	3- 181	3, 0, 3← 2, 0, 2	Ground					23 837.43	.1
HO ¹⁶	1-	9/2, 4← 9/2, 4	Ground	5		4		23 837.8	.3
O ^b O ^b O ^b	4-1847	Not Reported						23 838.	
Cs ¹³³ I ¹²⁷	1-	17←16	Excited					23 838.47	0.10
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 839.	5.
C ¹² H ₅ F ¹⁹	4-1281	10, 2, 8←10, 2, 9	Ground					23 839.2	.1
H ^b C ^b _* O ¹⁶ C ^b _* H ^b	4- 846	Not Reported	Excited					23 839.3	.3
C ¹² H ₃ O ¹⁶ N ¹⁴ O ¹⁶	3- 181	3, 0, 3← 2, 0, 2	Ground					23 839.80	.1
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	3, 1, 2← 3, 0, 3	Ground					23 840.0	.1
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	7, 2, 5← 7, 1, 6	Ground	13/2		13/2		23 841.25	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	7, 2, 5← 7, 1, 6	Ground	15/2		15/2		23 841.25	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Ground	3/2		1/2		23 841.6	.2
O ¹⁶ F ¹⁹	4-1611	7, 2, 5← 8, 1, 8	Ground					23 842.38	.10
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	7, 2, 5← 7, 1, 6	Ground	17/2		17/2		23 842.59	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	7, 2, 5← 7, 1, 6	Ground	11/2		11/2		23 842.59	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 843.	5.
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 843.8	.1
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	7, 2, 5← 7, 1, 6	Ground	15/2		15/2		23 846.17	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	7, 2, 5← 7, 1, 6	Ground	13/2		13/2		23 846.17	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		23 846.9	
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	7, 2, 5← 7, 1, 6	Ground	17/2		17/2		23 847.47	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	7, 2, 5← 7, 1, 6	Ground	11/2		11/2		23 847.47	.2
F ¹⁹ O ¹⁶ O ¹⁸	3- 12	1, 1, 1← 0, 0, 0	Ground					23 850.65	.1
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	11/2	7	9/2	6	23 851.47	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	13/2	7	15/2	6	23 851.47	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	13/2	6	11/2	5	23 851.47	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	11/2	4	9/2	3	23 851.47	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	9/2	4	7/2	3	23 851.47	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	17/2	8	11/2	7	23 853.25	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	9/2	3	7/2	2	23 853.25	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	13/2	5	11/2	4	23 853.25	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	9/2	6	7/2	5	23 853.25	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	9/2	5	7/2	4	23 853.25	0.20
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	7, 3, 4← 7, 2, 5	Ground					23 853.8	.2
C ¹² H ₃ O ¹⁶ H	3- 211	27, 2, ←27, 1,	Ground					23 854.25	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Ground		3/2		3/2	23 854.6	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 855.24	.1
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	15/2	6	13/2	5	23 855.66	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	15/2	7	13/2	6	23 855.66	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	15/2	8	13/2	7	23 855.66	0.20
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 856.2	.1
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	17/2	7	11/2	6	23 857.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	15/2	9	13/2	8	23 857.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	19/2	9	17/2	8	23 857.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	19/2	8	17/2	7	23 857.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	17/2	9	15/2	8	23 857.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	13/2	8	15/2	7	23 857.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	19/2	11	17/2	10	23 857.29	0.20
Ga ⁶⁹ I ¹²⁷	1-	7← 6	Ground	19/2	10	17/2	9	23 857.29	0.20
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	2, 2, 1← 1, 1, 1	Ground					23 858.82	.1
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 860.89	
O ₃ ¹⁶	4-1841	18, 3,15←19, 2,18	Ground					23 861.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					23 861.	5.
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	Not Reported	Ground					23 861.4	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	11, 4, ←12, 3,	Ground					23 861.40	.04
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	3/2		1/2		23 862.57	
C ¹² H ₂ F ₂ ¹⁹	4- 351	31, 9,23←32, 8,24	Ground					23 864.92	.10
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	6, 1, 5← 6, 1, 6	Ground					23 865.70	.10
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 1, 7← 7, 1, 6	Ground		13/2		11/2	23 866.4	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 1, 7← 7, 1, 6	Ground		15/2		13/2	23 866.4	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 1, 7← 7, 1, 6	Ground		19/2		17/2	23 866.8	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	8, 1, 7← 7, 1, 6	Ground		17/2		15/2	23 866.8	.1
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	7, 6, 2← 7, 5, 3	Ground					23 867.2	
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	6, 4, 3← 6, 3, 4	Ground					23 867.2	
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	23 868.0	
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	6, 1, 5← 6, 1, 6	Ground					23 868.02	.10
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	6, 1, 5← 6, 0, 6	Ground		13/2		13/2	23 868.13	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 870.	5.
N ¹⁴ H ₃	4-1771	3, 3← 3, 3	Ground					23 870.129	
N ¹⁴ H ₃	4-1771	3, 3← 3, 3	Ground					23 870.130	
N ¹⁴ H ₃	4-1771	3, 3← 3, 3	Ground					23 870.131	
C ¹² H ₂ F ₂ ¹⁹	4- 351	31, 9,22←32, 8,25	Ground					23 871.82	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 872.54	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	23 873.3	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	6, 1, 5← 6, 0, 6	Ground	11/2		11/2		23 873.61	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					23 873.61	.04
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Ground	3/2		3/2		23 875.3	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	9, 3, 6← 9, 2, 7	Ground					23 879.11	.03
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	10, 7, 3←10, 7, 4	Ground					23 879.57	.1
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	10, 3, 7←10, 3, 8	Ground					23 880.16	.05
O ¹⁶ C ¹³ Se ⁸⁰	4- 551	3← 2	Ground					23 880.18	.03
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 881.	5.
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	6, 1, 5← 6, 0, 6	Ground	13/2		13/2		23 881.79	.05
Cl ³⁵ C ¹³ N ¹⁴	4- 172	2← 1	Ground					23 883.	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Ground	5/2		5/2		23 883.1	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	1/2		1/2		23 883.30	
C ^b H ₂ C ^b Cl ^b F ^b	4- 333	Not Reported						23 883.90	.1
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					23 883.98	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	7/2	5/2	5/2	3/2	23 885.16	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	7/2	9/2	5/2	7/2	23 885.16	
O ¹⁶ C ¹² Se ⁸²	4- 548	3← 2	Excited					23 885.76	.03
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	6, 1, 5← 6, 0, 6	Ground	11/2		11/2		23 888.35	.05
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	5, 3, 2← 5, 2, 3	Ground					23 888.35	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Excited	9/2		7/2		23 888.4	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Excited	7/2		7/2		23 888.4	
C ¹² _* H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ _*	4-1091	8, 6, 2← 8, 6, 3	Ground					23 890.	
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	6, 1, 5← 6, 0, 6	Ground	15/2		15/2		23 890.79	.05
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Excited	9/2		7/2		23 893.5	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Excited	7/2		7/2		23 893.5	
C ¹² D ₃ I ¹²⁷	4- 482	2, 1← 1, 1	Ground	7/2		5/2		23 893.51	.08
Si ²⁹ H ₃ N ¹⁴ C ¹² S ³²	4- 494	8, ← 7,	Ground					23 894.22	
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					23 896.	5.
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	6, 1, 5← 6, 0, 6	Ground	9/2		9/2		23 896.07	.05
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	7, 3, 4← 7, 2, 5	Ground					23 896.29	
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					23 896.5	1.5
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	5, 3, 2← 5, 2, 3	Ground					23 897.3	.2
a-C ¹² HD ₂ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 678	10, 3, 7←10, 2, 8	Ground					23 897.77	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 898.	5.
C ¹³ _* H:C ¹² HO ¹⁶ C ¹² H:C ¹² _* H	4-1157	7, 6, 2← 7, 4, 3	Ground					23 898.3	.1
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	3/2	3/2	3/2	3/2	23 899.59	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	3/2	5/2	3/2	3/2	23 899.59	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	3/2	1/2	3/2	3/2	23 899.59	
C ¹² _* HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² _* H ₂	4-1251	11, 8, 3←11, 7, 5	Ground					23 900.	5.
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	3/2	3/2	3/2	5/2	23 900.20	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	3/2	5/2	3/2	5/2	23 900.20	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		23 904.1	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Excited	3/2		1/2		23 904.1	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	4, 0, 4← 3, 1, 3	Excited					23 904.63	.03
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Excited	9/2		7/2		23 905.9	.3
DO ¹⁶	1-	17/2, 8←17/2, 8	Ground	19/2		19/2		23 907.12	.10
DO ¹⁶	1-	17/2, 8←17/2, 8	Ground	17/2		17/2		23 907.12	.10
DO ¹⁶	1-	17/2, 8←17/2, 8	Ground	15/2		15/2		23 907.12	.10
Cs ¹³³ I ¹²⁷	1-	17←16	Excited					23 907.70	0.10
C ^b ₂ H ^b ₂ N ^b H ^b C ^b ₂ H ^b ₂	4- 863	Not Reported						23 908.	10.
C ¹² D ₃ :C ¹² H ₂ Br ⁷⁹	3- 523	6, 1, 5← 6, 0, 6	Ground	15/2		15/2		23 909.10	.05
a-C ¹² HD C ¹² O ¹⁶ C ¹² N ¹⁴	3- 678	10, 3, 7←10, 2, 8	Ground					23 911.19	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		23 911.6	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		23 911.6	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		23 914.3	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	2, 1, 1← 2, 0, 2	Ground					23 915.0	.2
C ¹² D ₃ :C ¹² H ₂ Br ⁷⁹	3- 523	6, 1, 5← 6, 0, 6	Ground	9/2		9/2		23 915.29	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		23 916.4	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		23 916.6	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Ground	7/2		7/2		23 916.6	
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 917.74	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	5/2		3/2		23 917.9	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	8, 1, 7← 8, 0, 8	Ground	13/2		13/2		23 920.73	.2
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Ground	1/2		3/2		23 920.91	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	8, 1, 7← 8, 0, 8	Ground	19/2		19/2		23 921.78	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Excited	5/2		3/2		23 922.1	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Excited	3/2		3/2		23 922.1	
N ¹⁵ H ₃	4-1772	6, 6← 6, 6	Ground					23 922.32	.02
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		23 922.9	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		23 922.9	
C ^b ₂ H ^b ₂ N ^b H ^b C ^b ₂ H ^b ₂	4- 863	Not Reported						23 923.	10.
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	5, 1, 4← 5, 1, 5	Ground					23 923.07	.35
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 924.35	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	8, 1, 7← 8, 0, 8	Ground					23 924.41	.2
C ¹² H ₅ O ¹⁶ H	3-1051	5, 4, 2← 5, 3, 3	Ground					23 925.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 925.5	.1
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	3/2		3/2		23 925.5	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	8, 1, 7← 8, 0, 8	Ground	15/2		15/2		23 926.95	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	8, 1, 7← 8, 0, 8	Ground	17/2		17/2		23 927.90	.2
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	5/2		5/2		23 928.7	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Ground	9/2		7/2		23 928.9	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Ground	7/2		5/2		23 928.9	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Excited	7/2		5/2		23 929.0	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Excited		5/2	3/2		23 929.0	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 930.	5.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Ground					23 933.31	.07
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Ground					23 933.48	.08
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						23 934.	5.
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	12, 9, 3←12, 8, 4	Ground					23 934.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Excited		3/2	1/2		23 935.0	
C ¹³ H ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 893	9, ← 8,	Ground					23 937.0	.5
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 937.1	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	11, 1,10←10, 2, 9	Ground					23 937.44	.1
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	7/2		5/2		23 938.6	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 1, 4← 5, 1, 5	Ground		4		4	23 938.78	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 1, 4← 5, 1, 5	Ground		6		6	23 938.78	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					23 939.	5.
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	5, 1, 4← 5, 1, 5	Ground					23 939.81	.35
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Ground		3/2	3/2		23 940.0	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Ground		5/2	3/2		23 940.0	
C ¹² D ₃ I ¹²⁷	4- 482	2, 1← 1, 1	Ground		5/2	5/2		23 940.01	.08
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Ground					23 940.06	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 2← 2, 2, 1	Ground		5/2	3/2		23 940.2	
C ₆ H ₅ F ¹⁹	4-1281	Not Reported						23 941.	5.
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 1, 4← 5, 1, 5	Ground		5		5	23 941.21	.10
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 942.9	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	3/2		1/2		23 944.4	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Ground					23 944.87	.05
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground		5/2	3/2		23 945.0	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Ground		3/2	3/2		23 945.1	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Ground		5/2	3/2		23 945.1	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					23 946.91	.1
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		7/2	5/2		23 947.4	
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		1/2	1/2		23 947.4	
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		5/2	3/2		23 947.4	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 947.6	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Ground		7/2	5/2		23 947.8	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Ground		5/2	3/2		23 947.8	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 948.	5.
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	5/2		3/2		23 948.2	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 3, 5← 8, 2, 6	Ground					23 948.98	.03
2,4,6d ₃ -C ¹² H ₅ F ¹⁹	4-1284	6, 2, 5← 5, 2, 4	Ground					23 950.9	.1
F ₂ O ¹⁶ O ¹⁸	3- 12	4, 0, 4← 3, 1, 3	Ground					23 951.57	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					23 951.99	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground		5/2	3/2		23 952.7	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Ground		5/2	3/2		23 952.7	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Ground		3/2	1/2		23 952.7	
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	4, 1, 4← 3, 1, 3	Ground	5/2	7/2	3/2	5/2	23 953.1	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	4, 1, 4← 3, 1, 3	Ground					23 953.63	.2
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	4, 1, 4← 3, 1, 3	Ground	9/2 11/2	7/2	9/2		23 953.9	.1
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	3/2	3/2			23 954.5	
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	1/2	1/2			23 954.5	
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	4, 0, 4← 3, 0, 3	Ground					23 955.17	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 1, 1← 0, 0, 0	Ground					23 955.64	.1
Cl ³⁷ F ₃ ¹⁹	4-1372	2, 1, 2← 1, 0, 1	Ground		5/2	5/2		23 957.65	.15
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					23 957.7	.1
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						23 958.1	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						23 958.29	.1
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	5/2	5/2			23 958.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground		3/2	1/2		23 958.5	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	4, 0, 4← 3, 1, 3	Ground					23 959.42	.03
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 1, 1← 0, 0, 0	Ground					23 960.29	.1
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					23 961.	
C ¹² H ₃ C ¹³ H ₂ C ¹² H ₃	3- 783	3, 1, 2← 3, 0, 3	Ground					23 961.76	.06
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	4, 0, 4← 3, 1, 3	Excited					23 962.2	.2
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Ground		3/2	1/2		23 963.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 964.	.1
O ¹⁶ C ¹² Se ⁸²	4- 548	3← 2	Ground					23 964.33	
Cl ³⁷ F ₃ ¹⁹	4-1372	2, 1, 2← 1, 0, 1	Ground		3/2	1/2		23 965.23	.15
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						23 966.	3.
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 3← 2, 1, 2	Ground		11/2	9/2		23 966.310	.040
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 3← 2, 1, 2	Ground		9/2	7/2		23 967.106	.040
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 3← 2, 1, 2	Ground		7/2	7/2		23 967.106	.040
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 3← 2, 1, 2	Ground		5/2	3/2		23 967.106	.040
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 3← 2, 1, 2	Ground		7/2	5/2		23 967.106	.040
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 3← 3, 2, 1	Ground					23 967.46	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 968.	5.
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	7/2	5/2			23 968.6	
C ¹² H ₃ C ¹² HDC ¹² H ₃	3- 784	4, 1, 3← 4, 0, 4	Ground					23 971.76	.06
Cl ³⁷ F ₃ ¹⁹	4-1372	2, 1, 2← 1, 0, 1	Ground		5/2	3/2		23 973.87	.15
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	4, 0, 4← 3, 0, 3	Ground					23 974.	1.
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	3/2	1/2			23 974.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground		3/2	3/2		23 975.0	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 1, 1← 0, 0, 0	Ground					23 975.20	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 3, 2← 4, 2, 3	Ground					23 975.38	.1
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	6, 6, 1← 6, 4, 2	Ground					23 976.1	.1
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	12, 6, 7←12, 6, 6	Ground					23 976.1	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 677	3, 1, 3← 2, 0, 2	Ground					23 976.34	.2
C ₆ H ₅ F ¹⁹	4-1281	15, 4,11←15, 4,12	Ground					23 976.8	
C ₅ ¹³³ I ¹²⁷	1-	17←16	Excited					23 976.96	0.10
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 1, 3← 2, 1, 2	Ground					23 977.46	.03
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 1, 3← 2, 1, 2	Ground					23 977.89	.03
C ₆ H ₅ O ¹⁶ H	3-1051	6, 4, 3← 6, 3, 4	Ground					23 978.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 980.	5.
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	4, 4, 1← 4, 2, 2	Ground					23 983.1	.5
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 3, 2← 4, 2, 3	Ground					23 983.98	.1
3d-C ₆ H ₅ F ¹⁹	4-1282	10, 2, 8←10, 2, 9	Ground					23 984.4	.1
Cl ³⁵ C ¹² N ¹⁴	4- 171	2← 1	Excited	1/2		1/2		23 984.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					23 985.	.1
C ₆ H ₅ N ¹⁴ O ₂ ¹⁶	3-1041	10, 2, 8← 9, 2, 7	Ground					23 985.	3.
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	4, 4, 1← 4, 2, 2	Ground					23 985.1	.5
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -E	3- 516	2, 0, 2← 1, 0, 1	Ground					23 985.67	.2
F ₂ O ₂ ¹⁶	3- 11	6, 1, 5← 6, 0, 6	Ground					23 986.65	.1
Cl ³⁷ F ₃ ¹⁹	4-1372	2, 1, 2← 1, 0, 1	Ground		7/2		5/2	23 986.75	.15
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -A	3- 515	2, 0, 2← 1, 0, 1	Ground					23 987.49	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Excited		3/2		3/2	23 987.6	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						23 989.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					23 989.0	.1
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	7, 2, 5← 7, 1, 6	Ground		15/2		15/2	23 989.95	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	7, 2, 5← 7, 1, 6	Ground		13/2		13/2	23 989.95	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	7, 2, 5← 7, 1, 6	Ground		17/2		17/2	23 991.05	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	7, 2, 5← 7, 1, 6	Ground		11/2		11/2	23 991.05	.2
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	4, 0, 4← 3, 0, 3	Ground					23 992.05	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Excited		7/2		5/2	23 992.4	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Excited		5/2		5/2	23 992.4	
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					23 992.66	
Cl ³⁷ F ₃ ¹⁹	4-1372	2, 1, 2← 1, 0, 1	Ground		3/2		3/2	23 994.55	.15
Cl ³⁷ F ₃ ¹⁹	4-1372	2, 1, 2← 1, 0, 1	Ground		1/2		1/2	23 994.55	.15
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						23 994.7	.3
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	8, 8, 0← 8, 7, 1	Ground					23 994.84	.05
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	7, 2, 5← 7, 1, 6	Ground		15/2		15/2	23 995.15	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	7, 2, 5← 7, 1, 6	Ground		13/2		13/2	23 995.15	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	3, 1, 2← 2, 1, 1	Ground		7/2		7/2	23 995.3	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	8, 8, 0← 8, 7, 1	Ground					23 995.50	
O ¹⁶ C ¹² Se ⁸²	4- 548	3← 2	Excited					23 996.26	.03
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	7, 2, 5← 7, 1, 6	Ground		17/2		17/2	23 996.28	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	7, 2, 5← 7, 1, 6	Ground		11/2		11/2	23 996.28	.2
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	8, 7, 2← 8, 5, 3	Ground					23 996.4	
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	7, 4, 3← 7, 4, 4	Ground					23 998.35	.2
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					23 999.7	.1
C ₈ H ₁₃ Cl ³⁵	4-1341	11, ←10,	Ground					23 999.8	
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	11,10, 1←11, 9, 2	Ground					24 001.9	
C ¹² H ₂ C ³⁵ C ¹² N ¹⁴	4- 651	4, 2, 3← 3, 2, 2	Ground					24 002.	1.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 003.2	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Ground		3/2		3/2	24 005.7	
g-C ¹² H C ¹² H C ¹² H Cl ³⁷	3- 774	4, 0, 4← 3, 0, 3	Ground					24 007.67	.2
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	4, 0, 4← 3, 1, 3	Ground					24 007.74	.03
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground		5/2		5/2	24 009.30	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	7, 4, 3← 7, 4, 4	Ground					24 010.20	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		24 010.3	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		24 010.3	
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		24 010.3	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	4, 3, 2← 4, 2, 3	Ground					24 010.42	.1
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	4, 3, 2← 3, 3, 1	Ground					24 011.	1.
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	4, 3, 1← 3, 3, 0	Ground					24 011.	1.
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	8, 2, 6← 8, 2, 7	Ground					24 011.56	.35
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground	3/2		1/2		24 012.33	.02
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	3, 0, 3← 2, 1, 2	Ground					24 012.43	.05
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	3, 0, 3← 2, 1, 2	Ground					24 012.92	.05
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground	5/2		5/2		24 012.94	.02
(C ¹² H ₃) ₂ Si ²⁸ D ₂	3- 643	3, 0, 3← 2, 1, 2	Ground					24 013.39	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 3, 3← 6, 2, 4	Ground	9/2		9/2		24 014.90	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	6, 1, 5← 6, 0, 6	Ground					24 014.94	
O ¹⁶ C ¹² Se ⁸²	4- 548	3← 2	Excited					24 014.97	.03
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Ground	5/2		5/2		24 015.1	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		24 015.1	
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	7, 2, 5← 7, 1, 6	Ground					24 015.28	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		24 015.3	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 3, 3← 6, 2, 4	Ground	15/2		15/2		24 015.90	.2
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					24 017.	5.
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					24 017.14	.2
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground	3/2		5/2		24 018.13	.02
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 019.01	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 3, 3← 6, 2, 4	Ground	11/2		11/2		24 019.20	.2
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground	1/2		1/2		24 019.59	.02
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	6, 3, 3← 6, 2, 4	Ground	13/2		13/2		24 020.20	.2
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground	7/2		5/2		24 020.23	.02
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground	5/2		3/2		24 020.23	.02
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 020.5	.3
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	9, 1, 9← 8, 2, 6	Ground					24 020.97	.1
S ³² C ¹² Se ⁸²	4- 561	6← 5	Ground					24 021.	4.
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	9, 1, 9← 8, 2, 6	Ground					24 021.75	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Excited	7/2		7/2		24 024.05	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Excited	9/2		7/2		24 024.05	
s-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 247	2, 1, 1← 1, 1, 0	Ground					24 024.70	.10
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground	3/2		3/2		24 025.42	.02
O ¹⁶ C ¹² Se ⁸⁰	4- 547	3← 2	Excited					24 026.39	.03
DC ¹³ N ¹⁴	4- 294	11←11	Excited					24 026.60	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	9, 1, 9← 8, 2, 6	Ground					24 026.92	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 0, 3← 2, 0, 2	Ground	7/2		7/2		24 027.15	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	9, 1, 9← 8, 2, 6	Ground					24 027.57	.1
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	8, 2, 6← 8, 2, 7	Ground					24 027.98	.35
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 028.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	4, 1, 3← 3, 1, 2	Ground					24 028.26	
C ¹² D ₃ I ¹²⁷	4- 482	2, 0← 1, 0	Ground		3/2		3/2	24 029.16	.08
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	4, 1, 4← 3, 1, 3	Ground					24 030.18	.2
O ¹⁶ C ¹³ Se ⁷⁸	4- 549	3← 2	Ground					24 030.58	.03
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 031.7	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 1, 1← 0, 0, 0	Ground					24 032.19	.1
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground		1/2		3/2	24 032.68	.02
C ¹² H ₃ Si ²⁸ HDF ¹⁹	3- 252	2, 0, 2← 1, 0, 1	Ground					24 034.80	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					24 034.84	.1
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	Not Reported	Ground					24 035.	20.
C ¹² H ₂ Cl ³⁵ C ¹² N ¹⁴	4- 651	4, 2, 2← 3, 2, 1	Ground					24 036.	1.
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	7, 3, 4← 7, 2, 5	Ground					24 036.17	.03
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 037.31	
S ³² O ₂ ¹⁶	4-1831	21, 5,17←22, 4,18	Ground					24 039.50	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 040.	5.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Excited		9/2		7/2	24 040.9	.3
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	24 042.1	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground		7/2		7/2	24 042.1	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	24 042.5	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	9, 8, 2← 9, 6, 3	Ground					24 043.08	
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						24 043.3	.2
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		5/2		3/2	24 044.0	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Excited		3/2		1/2	24 044.0	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Excited		9/2		7/2	24 044.0	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 045.2	
Cs ¹³³ I ¹²⁷	1-	17←16	Ground					24 046.40	0.10
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		3/2		3/2	24 046.9	
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		5/2		5/2	24 046.9	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 047.	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Ground		7/2		7/2	24 047.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	24 047.4	
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	24 047.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 048.	.1
S ³² C ¹² Se ⁸²	4- 561	6← 5	Excited					24 048.	4.
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	20, 2,19←19, 3,16	Ground					24 048.17	.1
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	12, 6, 7←12, 6, 6	Ground					24 048.8	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	20, 2,19←19, 3,16	Ground					24 050.16	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	4, 0, 4← 3, 1, 3	Ground					24 051.09	.03
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		7/2		5/2	24 051.2	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Ground		5/2		5/2	24 052.5	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Excited		5/2		3/2	24 052.5	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Excited		3/2		3/2	24 052.5	
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	Not Reported	Ground					24 055.	20.
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	3, 1, 2← 3, 0, 3	Ground					24 055.	
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	4, 2, 2← 4, 1, 3	Ground		5/2		5/2	24 055.5	.3

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² HCl ³⁵ :C ¹² F ¹⁹ ₂	4- 611	4, 2, 2← 4, 1, 3	Ground	11/2	11/2			24 057.1	.3
C ¹² HCl ³⁵ :C ¹² F ¹⁹ ₂	4- 611	4, 2, 2← 4, 1, 3	Ground	7/2	7/2			24 059.8	.3
Cl ³⁷ F ¹⁹ ₃	4-1372	5, 2, 3← 5, 1, 4	Ground	13/2	13/2			24 060.00	.15
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 2← 2, 1, 1	Excited	9/2	7/2			24 060.5	
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					24 060.7	
C ¹² HCl ³⁵ :C ¹² F ¹⁹ ₂	4- 611	4, 2, 2← 4, 1, 3	Ground	9/2	9/2			24 061.3	.3
Cl ³⁷ F ¹⁹ ₃	4-1372	5, 2, 3← 5, 1, 4	Ground	11/2	11/2			24 062.09	.15
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Ground	3/2	1/2			24 062.2	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			24 062.8	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			24 063.7	
Cl ³⁵ F ¹⁹ ₃	4-1371	2, 1, 2← 1, 0, 1	Ground	5/2	5/2			24 063.80	.15
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground	7/2	5/2			24 064.00	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground	9/2	7/2			24 064.00	
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					24 064.1	
Ge ⁷² H ₃ Br ⁷⁹	4- 103	5, ← 4,	Ground					24 064.35	1.
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					24 065.1	
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	4, 1, 4← 3, 1, 3	Ground					24 065.46	.2
C ¹² HDHC ¹² HDF ¹⁹	3- 559	3, 1, 2← 3, 0, 3	Ground					24 066.1	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					24 067.5	.1
HC ¹² HO ¹⁶	4- 381	17, 3,14←17, 3,15	Ground					24 068.31	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Excited	5/2	3/2			24 069.10	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Excited	3/2	1/2			24 069.10	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground					24 069.18	.08
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited	5/2	3/2			24 069.2	
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 2← 2, 1, 1	Ground	5/2	5/2			24 071.9	
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited	5/2	5/2			24 072.0	
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited	3/2	3/2			24 072.0	
C ¹² H ₅ F ¹⁹	4-1281	8, 1, 7← 8, 1, 8	Ground					24 072.3	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	3, 1, 2← 3, 1, 3	Ground					24 072.41	.2
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	9, 3, 6← 9, 2, 7	Ground					24 072.85	.03
Cl ³⁵ F ¹⁹ ₃	4-1371	2, 1, 2← 1, 0, 1	Ground	3/2	1/2			24 073.44	.15
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Excited	7/2	5/2			24 073.7	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Excited	5/2	3/2			24 073.7	
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	Not Reported	Ground					24 075.	20.
S ³² C ¹² Se ⁸²	4- 561	6← 5	Excited					24 075.	4.
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Ground					24 075.33	.05
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited	7/2	5/2			24 075.7	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground	3/2	3/2			24 076.1	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground	5/2	3/2			24 076.1	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground					24 076.44	.05
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground	5/2	3/2			24 076.7	
a-C ¹² H ₂ DSi ²⁸ HF ¹⁹ ₂	3- 204	3, 1, 3← 2, 1, 2	Ground					24 078.27	2.
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	2, 1, 1← 2, 0, 2	Ground					24 078.7	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 078.75	.1
P ³¹ HD ₂	4-1783	5, 3, 3← 5, 2, 3	Ground					24 079.48	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	3, 1, 2← 3, 1, 3	Ground					24 079.83	.2
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 3← 2, 1, 1	Ground		9/2		7/2	24 080.2	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 081.	5.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Ground					24 081.22	.05
C ¹² D ₃ I ¹²⁷	4- 482	2, 1← 1, 1	Ground		3/2		5/2	24 081.25	.08
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	24 081.3	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Ground		3/2		3/2	24 081.3	
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	3, 1, 2← 3, 1, 3	Ground					24 082.77	.2
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	3, 1, 2← 3, 1, 3	Ground					24 082.84	.2
a-C ¹² H ₂ DSi ²⁸ HF ¹⁹ ₂	3- 204	3, 1, 3← 2, 1, 2	Ground					24 083.22	2.
S ³² O ¹⁶ ₂	4-1831	8, 2, 6← 9, 1, 9	Ground					24 083.39	.1
Cl ³⁵ F ¹⁹ ₃	4-1371	2, 1, 2← 1, 0, 1	Ground		5/2		3/2	24 084.00	.15
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited		7/2		5/2	24 085.5	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 2, 5← 7, 1, 6	Ground		15/2		15/2	24 086.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 2, 5← 7, 1, 6	Ground		13/2		13/2	24 086.30	.2
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					24 086.7	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 2, 5← 7, 1, 6	Ground		11		11	24 087.55	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 2, 5← 7, 1, 6	Ground		17/2		17/2	24 087.55	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 089.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	28, 9,19←28, 9,20	Ground					24 089.	5.
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	4, 0, 4← 3, 1, 3	Ground					24 089.49	.03
C ¹² *H ₂ C ¹² H:C ¹² *H	4-1031	2, 1, 1← 2, 1, 2	Ground					24 089.6	
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁵	4- 671	6, 2, 4← 6, 1, 5	Ground					24 090.1	
C ¹² HD ₂ C ¹² HDF ¹⁹	3- 558	4, 1, 3← 4, 0, 4	Ground					24 090.2	.1
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 2← 2, 1, 1	Ground					24 090.58	.06
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	4, 3, 2← 5, 2, 3	Ground					24 090.66	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 2, 5← 7, 1, 6	Ground		13		13	24 091.40	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 2, 5← 7, 1, 6	Ground		15		15	24 091.40	.2
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		7/2		5/2	24 092.4	
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		1/2		1/2	24 092.4	
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Excited		5/2		3/2	24 092.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	24 092.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	24 092.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	24 092.5	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Ground		5/2		3/2	24 092.5	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	24 092.5	
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					24 092.5	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 2, 5← 7, 1, 6	Ground		17		17	24 092.65	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	7, 2, 5← 7, 1, 6	Ground		11		11	24 092.65	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	4, 2, 3← 5, 1, 4	Ground					24 093.24	
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	4, 1, 4← 3, 1, 3	Ground					24 093.70	.2
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	7, 4, 4← 7, 3, 5	Ground					24 095.4	
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	4, 0, 4← 3, 0, 3	Ground					24 095.95	.2
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 3, 5← 8, 2, 6	Excited					24 096.12	.03
C ¹² D ₃ I ¹²⁷	4- 482	2, 1← 1, 1	Ground		7/2		7/2	24 097.49	.08

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	10, 7, 3←10, 7, 4	Ground					24 099.1	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	8, 0, 8← 7, 1, 7	Ground					24 100.	5.
Cl ³⁵ F ₃ ¹⁹	4-1371	2, 1, 2← 1, 0, 1	Ground	7/2		5/2		24 100.42	.15
C ¹² _* H ₂ S ^b C ¹² _* H ₂ ^b	4- 854	Not Reported						24 101.4	.2
Ge ⁷⁰ H ₃ Br ⁸¹	4- 102	5, ← 4,	Ground					24 101.61	1.
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	10, 7, 3←10, 7, 4	Ground					24 101.7	
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						24 102.	5.
C ¹² H ₂ :C ¹³ HBr ⁸¹	4- 738	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		24 102.5	.5
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					24 103.	5.
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					24 103.39	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2		5/2		24 104.5	
C ¹² _* H ₂ S ^b C ¹² _* H ₂ ^b	4- 854	Not Reported						24 105.0	10.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						24 105.38	.1
O ¹⁶ C ¹² Se ⁸⁰	4- 547	3← 2	Ground					24 105.85	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	9, 3, 6← 9, 2, 7	Ground					24 109.5	.2
Cl ³⁵ F ₃ ¹⁹	4-1371	2, 1, 2← 1, 0, 1	Ground	3/2		3/2		24 110.32	.15
Cl ³⁵ F ₃ ¹⁹	4-1371	2, 1, 2← 1, 0, 1	Ground	1/2		1/2		24 110.32	.15
Cl ³⁷ F ₃ ¹⁹	4-1372	6, 2, 4← 6, 1, 5	Ground	15/2		15/2		24 111.82	.15
N ^b O ₂ Cl ^b	4-1463	Not Reported						24 113.	
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 509	2, 0, 2← 1, 0, 1	Ground					24 114.02	.2
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	13/2	8	11/2	7	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	13/2	7	11/2	6	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	13/2	6	11/2	5	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	13/2	5	11/2	4	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	11/2	7	9/2	6	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	11/2	6	9/2	5	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	9/2	6	7/2	5	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	11/2	5	9/2	4	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	11/2	4	9/2	3	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	9/2	5	7/2	4	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	9/2	4	7/2	3	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	9/2	3	7/2	2	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	7/2	2	5/2	1	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	7/2	4	5/2	3	24 114.08	0.20
Ga ⁷¹ Br ⁸¹	1-	5← 4	Ground	7/2	3	5/2	2	24 114.08	0.20
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	Not Reported	Ground					24 115.	20.
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 508	2, 0, 2← 1, 0, 1	Ground					24 115.85	.2
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	17,12, 5←17,12, 6	Ground					24 117.22	.1
Cl ³⁷ F ₃ ¹⁹	4-1372	6, 2, 4← 6, 1, 5	Ground	9/2		9/2		24 117.35	.15
Cl ³⁷ F ₃ ¹⁹	4-1372	6, 2, 4← 6, 1, 5	Ground	13/2		13/2		24 118.20	.15
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	17,12, 5←17,12, 6	Ground					24 118.48	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						24 120.0	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 120.8	.1
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	Not Reported	Ground					24 125.	20.
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 3← 3, 2, 1	Ground					24 125.48	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F F 1 1				Frequency MHz	Acc. ±MHz
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 126.4	.1
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2		7/2		24 127.0	.2
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	5, 0, 5← 4, 1, 4	Ground					24 131.4	1.
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						24 132.	3.
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	7, 3, 4← 7, 2, 5	Ground					24 132.67	.2
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	7, 2, 5← 6, 3, 4	Ground					24 132.7	.3
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Excited	5/2		5/2		24 136.9	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Excited	7/2		5/2		24 136.9	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 138.	5.
O ¹⁶ C ¹² Se ⁸⁰	4- 547	3← 2	Excited					24 138.05	.03
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					24 138.78	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 138.8	.1
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	1, 1, 0← 1, 0, 1	Ground					24 139.	5.
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	14, 2, 12←15, 1, 15	Ground					24 139.	
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					24 139.0	
N ¹⁴ H ₃	4-1771	4, 4← 4, 4	Ground					24 139.41	.02
c-HCl ³⁵ C ¹² :C ¹² HCl ³⁵	4- 671	11, 2, 9←11, 1, 10	Ground					24 139.42	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 140.	5.
In ¹¹⁵ I ¹²⁷	1-	11←10	Excited					24 140.91	0.20
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	4, ← 3,	Ground					24 141.5	.10
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Excited	7/2		5/2		24 142.1	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Excited	5/2		5/2		24 142.1	
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	6, 1, 5← 6, 0, 6	Ground					24 142.60	.20
C ¹³ H ₃ N ¹⁴ C ¹² S ³²	3- 422	5, , ← 4, ,	Ground					24 143.	
In ¹¹⁵ I ¹²⁷	1-	11←10	Excited					24 143.30	0.20
C ¹² H ₂ :C ¹² DBr ^b	4- 729	3, , ← 2, ,	Ground					24 146.7	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 149.3	.3
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	3, 1, 2← 2, 1, 1	Ground	7/2		7/2		24 149.4	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	3, 1, 3← 2, 0, 2	Ground					24 150.7	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2		7/2		24 150.9	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						24 152.	3.
C ¹² DH ₂ C ¹² HDF ¹⁹	3- 562	2, 2, 0← 3, 1, 3	Ground					24 152.3	.1
O ¹⁶ C ¹² Se ⁷⁹	4- 546	3← 2	Ground	7/2		7/2		24 153.204	
C ₆ H ₅ Cl ³⁵	4-1271	8, 2, 6← 7, 2, 5	Ground	15/2		13/2		24 156.1	.1
C ₆ H ₅ Cl ³⁵	4-1271	8, 2, 6← 7, 2, 5	Ground	17/2		15/2		24 156.1	.1
C ₆ H ₅ Cl ³⁵	4-1271	8, 2, 6← 7, 2, 5	Ground	13/2		11/2		24 156.9	.1
C ₆ H ₅ Cl ³⁵	4-1271	8, 2, 6← 7, 2, 5	Ground	19/2		17/2		24 156.9	.1
O ¹⁶ C ¹² Se ⁸⁰	4- 547	3← 2	Excited					24 156.93	.03
O ¹⁶ C ¹² Se ⁷⁹	4- 546	3← 2	Ground	1/2		3/2		24 158.9	
O ¹⁶ C ¹² Se ⁷⁹	4- 546	3← 2	Ground	11/2		9/2		24 158.9	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	8, 7, 2← 8, 6, 3	Ground					24 159.2	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	3/2	2	3/2	1	24 159.62	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground	5/2		5/2		24 160.0	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		24 160.0	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		24 160.8	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	8, 3, 5← 8, 2, 6	Ground					24 161.20	.2
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	3/2	3	3/2	3	24 161.42	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Ground		5/2		5/2	24 165.2	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	24 165.2	
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	24 165.6	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	9/2	6	9/2	6	24 165.82	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	5/2	3	3/2	2	24 165.82	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 166.	5.
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	3/2	1	3/2	2	24 166.92	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	4, 2, 3← 3, 2, 2	Ground					24 168.19	.2
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					24 170.	20.
O ¹⁶ C ¹² Se ⁷⁹	4- 546	3← 2	Ground		13/2		11/2	24 170.194	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 1, 7← 8, 0, 8	Ground		13/2		13/2	24 170.70	.15
C ¹² DHCl ₂ ³⁵	4- 344	1, 1, 0← 1, 0, 1	Ground					24 171.	2.
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					24 171.7	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	9/2	4	9/2	4	24 171.70	.1
O ¹⁶ C ¹⁴ S ³²	4- 528	2← 1	Ground					24 173.0	1.0
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 1, 7← 8, 0, 8	Ground		19/2		19/2	24 173.27	.15
O ¹⁶ C ¹² Se ⁷⁸	4- 545	3← 2	Excited					24 174.30	.03
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 1, 7← 8, 0, 8	Ground		13/2		13/2	24 174.40	.15
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	10,10, 1←10, 9, 2	Ground					24 174.7	.1
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						24 175.0	10.
O ¹⁶ C ¹³ S ³²	4- 526	2← 1	Excited					24 176.07	1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 1, 7← 8, 0, 8	Ground		19/2		19/2	24 176.97	.15
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	5/2	3	5/2	3	24 178.75	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	7/2	4	5/2	3	24 178.75	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	4, 0, 4← 3, 0, 3	Ground					24 179.0	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	4, 0, 4← 3, 0, 3	Ground					24 179.60	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	5, 3, 2← 5, 2, 3	Ground		7/2		7/2	24 179.60	.2
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited					24 179.62	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	3/2	2	5/2	3	24 179.92	.1
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					24 180.	20.
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited					24 180.47	.2
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	7/2	5	7/2	5	24 180.63	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	7/2	2	7/2	2	24 181.28	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 0, 3← 2, 0, 2	Ground		7/2		7/2	24 181.45	
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 0, 3← 2, 0, 2	Ground		7/2		7/2	24 181.5	.2
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 0, 3← 2, 0, 2	Ground		1/2		1/2	24 181.70	.150
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	24 181.70	.150
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	5, 3, 2← 5, 2, 3	Ground		13/2		13/2	24 181.90	.2
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						24 183.0	.2
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground		11/2		9/2	24 183.70	.05
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground		7/2		9/2	24 183.70	.05
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	24 183.70	.05
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground		9/2		9/2	24 183.70	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground	5/2		3/2		24 183.70	.05
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground	1/2		3/2		24 183.70	.05
O ¹⁶ C ¹² Se ⁸⁰	4- 547	3← 2	Excited					24 183.97	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 1, 7← 8, 0, 8	Ground	15/2		15/2		24 184.13	.15
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	11, 8, 3←11, 7, 4	Ground					24 184.2	
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					24 185.	20.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 1, 7← 8, 0, 8	Ground	17/2		17/2		24 186.53	.15
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 0← 3, 2, 1	Ground	7/2	4	7/2	4	24 186.65	.1
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		24 186.85	.1
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		24 186.85	.1
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 2← 2, 2, 1	Ground	5/2		7/2		24 186.85	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	12, 9, 3←12, 8, 4	Ground					24 187.55	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 1, 7← 8, 0, 8	Ground	15/2		15/2		24 187.65	.15
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	12, 9, 3←12, 8, 4	Ground					24 188.04	.1
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	5, 3, 2← 5, 2, 3	Ground	9/2		9/2		24 188.08	.2
O ¹⁶ C ¹² Se ⁸⁰	4- 547	3← 2	Excited					24 188.18	
C ₆ H ₅ F ¹⁹	4-1281	45,14,31←45,14,32	Ground					24 189.7	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						24 190.0	10.
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	5, 3, 2← 5, 2, 3	Ground	11/2		11/2		24 190.08	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 1, 7← 8, 0, 8	Ground	17/2		17/2		24 190.15	.15
O ¹⁶ C ¹² Se ⁷⁹	4- 546	3← 2	Ground	9/2		7/2		24 190.787	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 191.0	.1
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						24 192.0	10.
s-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 397	2, 1, 2← 1, 1, 1	Ground					24 196.65	.2
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	6, 5, 2← 6, 3, 3	Ground					24 196.7	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	4, 2, 2← 4, 1, 3	Ground					24 196.71	.2
O ¹⁶ C ¹⁴ S ³²	4- 528	2← 1	Excited					24 197.0	1.0
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 200.0	.1
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		24 201.6	
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	7, 1, 6← 7, 0, 7	Ground	15/2		15/2		24 201.97	.05
S ³² C ¹² Se ⁸⁰	4- 562	6← 5	Ground					24 203.	4.
C ¹² D ₃ I ¹²⁷	4- 482	2, 0← 1, 0	Ground	9/2		7/2		24 203.19	.08
D ₂ O ₂ ¹⁶	3- 42	Not Reported						24 204.	3.
Si ³⁰ D ₃ F ¹⁹	4-1556	1, ← 0,	Ground					24 204.5	.2
O ¹⁶ C ¹² Se ⁷⁹	4- 546	3← 2	Ground	3/2		3/2		24 204.692	
N ¹⁴ H ₃	4-1771	10, 9←10, 9	Ground					24 205.29	.02
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	6, 1, 5← 6, 0, 6	Ground					24 205.33	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	9, 6, 3← 9, 6, 4	Ground					24 205.50	.1
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		24 205.84	.05
C ₆ H ₅ O ¹⁶ H	3-1051	7, 4, 4← 7, 3, 5	Ground					24 206.8	
In ¹¹⁵ I ¹²⁷	1-	11←10	Excited					24 206.89	0.20
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 207.6	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						24 208.	3.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
In ¹¹⁵ I ¹²⁷	1-	11←10	Excited					24 209.36	0.20
In ¹¹⁵ I ¹²⁷	1-	11←10	Excited					24 210.68	0.20
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		5/2		5/2	24 211.3	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	6, 1, 5← 6, 0, 6	Ground					24 211.49	.2
In ¹¹⁵ I ¹²⁷	1-	11←10	Excited					24 211.78	0.20
C ¹² _* D:C ¹² DC ¹² D:C ¹² DN ¹⁴ _* H	4-1185	10, 7, 3←10, 6, 4	Ground					24 213.0	
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	8, 1, 7← 8, 0, 8	Ground					24 213.27	
In ¹¹⁵ I ¹²⁷	1-	11←10	Excited					24 213.78	0.20
S ³² C ¹² Se ⁸⁰	4- 562	6← 5	Excited					24 214.	4.
(C ¹² D ₃) ₂ O ¹⁶	3- 592	5, 1, 4← 5, 0, 5	Ground					24 219.8	.5
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	7, 1, 6← 7, 0, 7	Ground		17/2		17/2	24 220.70	.05
C ¹² _* HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² _* H ₂	4-1251	10, 8, 2←10, 7, 4	Ground					24 221.	5.
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		9/2		7/2	24 221.0	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 7← 7, 7	Ground					24 223.56	.1
O ¹⁶ C ¹⁴ S ³²	4- 528	2← 1	Excited					24 224.0	1.0
F ¹⁹ O ₂ ¹⁶	3- 11	6, 1, 5← 6, 0, 6	Ground					24 224.09	.1
C ¹² H ₃ C ¹² D ₂ Br ⁸¹	3- 526	7, 1, 6← 7, 0, 7	Ground		11/2		11/2	24 224.11	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 226.	5.
DN ¹⁴ O ₃ ¹⁶	3- 32	5, 3, 2← 5, 3, 3	Ground					24 229.63	
S ³² C ¹² Se ⁸⁰	4- 562	6← 5	Excited					24 230.	4.
C ¹² _* H ₂ S ^b C ¹² _* H ₂	4- 854	Not Reported						24 230.0	10.
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 3← 3, 2, 1	Ground					24 230.29	
C ^b H ₂ :C ^b HBr ^b	4- 752	3, 1, 2← 2, 1, 1	Excited		7/2		5/2	24 230.8	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 232.	5.
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 6← 7, 6	Ground					24 232.05	.1
C ¹² D ₃ I ¹²⁷	4- 482	2, 1← 1, 1	Ground		5/2		3/2	24 232.16	.08
C ¹² H ₂ :C ¹³ HBr ⁷⁹	4- 737	3, 1, 2← 2, 1, 1	Ground					24 233.53	.06
Cl ^b O ¹⁶	4-1484	1, 1, 1← 2, 0, 2	Ground					24 233.95	
O ¹⁶ C ¹² Se ⁷⁹	4- 546	3← 2	Ground		7/2		5/2	24 234.329	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	10, 4, 6←10, 3, 7	Ground		17/2		17/2	24 235.00	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	10, 4, 6←10, 3, 7	Ground		23/2		23/2	24 235.00	
C ¹² D ₃ I ¹²⁷	4- 482	2, 0← 1, 0	Ground		7/2		5/2	24 235.67	.08
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					24 236.3	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	10, 4, 6←10, 3, 7	Ground		21/2		21/2	24 236.35	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	10, 4, 6←10, 3, 7	Ground		19/2		19/2	24 236.35	
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 3← 3, 2, 1	Ground					24 236.48	
C ¹² _* H ₂ N ¹⁴ DC ¹² _* H ₂	4- 862	5, 5, 1← 5, 3, 2	Ground					24 237.5	.5
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					24 238.2	
C ¹² _* H ₂ N ¹⁴ DC ¹² _* H ₂	4- 862	5, 5, 1← 5, 3, 2	Ground					24 239.1	.5
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 5← 7, 5	Ground					24 239.39	.1
C ¹² _* H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ _*	4-1091	7, 5, 2← 7, 5, 3	Excited					24 240.	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 240.8	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	7, 1, 6← 7, 0, 7	Ground	15/2	15/2			24 240.94	.05
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	13, 2,11←13, 1,12	Ground					24 241.7	.1
C ¹² HCl ³⁷ :C ¹² F ₂ ¹⁹	4- 612	13, 2,11←13, 1,12	Ground					24 242.8	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	7, 3, 4← 7, 2, 5	Ground					24 243.23	.03
C ¹³ H ₃ S ³² H	3- 222	1, 0, 1← 0, 0, 0	Ground					24 245.0	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 4← 7, 4	Ground					24 245.53	.1
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	7, 1, 6← 7, 0, 7	Ground	13/2	13/2			24 245.82	.05
O ¹⁶ C ¹³ S ³²	4- 526	2← 1	Ground					24 247.82	.03
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 248.5	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						24 250.	1.
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 3← 7, 3	Ground					24 250.15	.1
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	2, 1, 1← 1, 1, 0	Ground					24 250.27	.35
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2	5/2			24 250.4	
O ¹⁶ C ¹² Se ⁷⁷	4- 544	3← 2	Excited					24 250.84	.03
C ¹² H ₂ DCI ³⁷	4- 429	1, 0, 1← 0, 0, 0	Ground					24 252.00	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 253.17	.1
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited					24 253.51	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 2← 7, 2	Ground					24 253.81	.1
O ¹⁶ C ¹² Se ⁷⁸	4- 545	3← 2	Ground					24 254.43	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 1← 7, 1	Ground					24 255.75	.1
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , ← 2, ,	Ground					24 256.0	.3
HDO ¹⁷	4-1714	3, , ← 2, ,	Ground					24 256.0	.05
C ¹³ H ₃ S ³² H	3- 222	1, 0, 1← 0, 0, 0	Ground					24 256.2	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	12, 9, 3←12, 8, 4	Ground					24 256.57	.1
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground					24 261.72	.2
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	12, 7, 6←12, 8, 4	Ground					24 262.	5.
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	7, 1, 6← 7, 0, 7	Ground	17/2	17/2			24 263.26	.05
C ¹² H ₂ DCI ³⁷	4- 429	1, 0, 1← 0, 0, 0	Ground					24 266.68	
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	7, 1, 6← 7, 0, 7	Ground					24 267.19	.05
C ¹² H ₃ C ¹² D ₂ Br ⁷⁹	3- 524	7, 1, 6← 7, 0, 7	Ground	11/2	11/2			24 267.19	.05
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					24 267.4	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 267.9	.1
C ₆ H ₅ C ¹² N ¹⁵	4-1292	9, 7, 3← 8, 7, 2	Ground					24 268.2	.2
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					24 271.2	
N ¹⁵ N ¹⁴ O ¹⁶	4-1813	1← 0	Ground	1	1			24 274.53	
N ¹⁵ N ¹⁴ O ¹⁶	4-1813	1← 0	Ground	2	1			24 274.61	
N ¹⁵ N ¹⁴ O ¹⁶	4-1813	1← 0	Ground	0	1			24 274.73	
N ₂ O ¹⁶	4-1814	1← 0	Ground					24 274.78	
O ¹⁶ C ¹³ S ³²	4- 526	2← 1	Excited					24 274.84	.03
In ¹¹⁵ I ¹²⁷	1-	11←10	Ground					24 275.39	0.20
C ¹² D ₃ I ¹²⁷	4- 482	2, 0← 1, 0	Ground	1/2	3/2			24 277.13	.08
In ¹¹⁵ I ¹²⁷	1-	11←10	Ground					24 278.01	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ DCI ³⁷	4- 429	1, 0, 1← 0, 0, 0	Ground					24 278.33	
S ³² O ¹⁶ F ¹⁹ ₂	4-1621	Not Reported						24 278.55	.1
C ¹² H ₃ B ^b F ¹⁹ ₂	3- 91	2, , ← 1, ,	Ground					24 278.8	.1
In ¹¹⁵ I ¹²⁷	1-	11←10	Ground					24 279.23	0.20
C ¹² D ₃ I ¹²⁷	4- 482	2, 1← 1, 1	Ground	9/2		7/2		24 279.89	.08
In ¹¹⁵ I ¹²⁷	1-	11←10	Ground					24 280.42	0.20
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , ← 2, ,	Ground					24 280.5	.1
HDO ¹⁷	4-1714	3, , ← 2, ,	Ground					24 280.5	.05
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	.6, 5, 2← 6, 3, 3	Ground					24 281.6	
In ¹¹⁵ I ¹²⁷	1-	11←10	Ground					24 282.48	0.20
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					24 282.8	
a-C ¹² H ₂ DC ¹² H ₂ C ¹² H ₃	3- 786	4, 1, 3← 4, 0, 4	Ground					24 283.11	.06
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	9, 3, 6← 9, 2, 7	Ground					24 284.40	.03
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	12, 9, 3←12, 8, 4	Ground					24 285.62	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						24 285.79	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 286.	5.
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						24 286.23	
O ¹⁶ C ¹² Se ⁷⁸	4- 545	3← 2	Excited					24 286.82	.03
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						24 288.71	.01
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2		7/2		24 289.2	
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited					24 289.97	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						24 290.	10.
Re ^b O ₃ Cl ³⁷	4-1476	6, ← 5,						24 290.	
N ¹⁴ H ₂ C ₂ ¹² H ₅	3- 631	Not Reported	Ground					24 291.18	.2
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		1/2	3/2		24 292.35	.08
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		3/2	3/2		24 292.35	.08
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		9/2	9/2		24 292.35	.08
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		11/2	9/2		24 292.35	.08
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		7/2	9/2		24 292.35	.08
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		5/2	3/2		24 292.35	.08
H ₂ C ¹² :C ¹² F ¹⁹ ₂	4- 681	Not Reported						24 293.6	.3
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					24 293.7	
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	13/2	7	11/2	6	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	11/2	5	9/2	4	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	11/2	4	9/2	3	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	9/2	6	7/2	5	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	13/2	6	11/2	5	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	11/2	6	9/2	5	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	13/2	5	11/2	4	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	11/2	7	9/2	6	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	7/2	3	5/2	2	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	7/2	4	5/2	3	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	7/2	2	5/2	1	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	9/2	5	7/2	4	24 294.26	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	13/2	8	11/2	7	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	9/2	3	7/2	2	24 294.26	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	9/2	4	7/2	3	24 294.26	0.20
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						24 295.	
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		7/2		7/2	24 295.45	.1
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	24 295.45	.1
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 2, 1← 2, 2, 0	Ground		5/2		7/2	24 295.45	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	2, 0, 2← 1, 0, 1	Ground					24 296.60	.2
C ¹² H ₂ F ₂ ¹⁹	4- 351	54,13,42←53,14,39	Ground					24 297.52	.10
C ¹² H ₂ F ₂ ¹⁹	4- 351	54,13,41←53,14,40	Ground					24 297.52	.10
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						24 298.	3.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 298.2	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	2, 0, 2← 1, 0, 1	Ground					24 298.40	.2
C ₆ ¹² H ₅ F ¹⁹	4-1281	8, 3, 6← 8, 1, 7	Ground					24 300.5	.1
O ¹⁶ C ¹³ S ³²	4- 526	2← 1	Excited					24 300.58	.03
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	3, 1, 3← 2, 0, 2	Ground					24 301.42	.03
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 302.	5.
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	4, 1, 3← 3, 2, 2	Ground					24 302.40	.10
C ¹² H ₃ S ³² D	3- 223	1, 0, 1← 0, 0, 0	Ground					24 302.9	
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	2, 1, 2← 1, 0, 1	Ground					24 304.47	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		7/2		7/2	24 305.7	
O ¹⁶ C ¹² Se ⁷⁸	4- 545	3← 2	Excited					24 305.95	.03
C ¹³ H ₃ S ³² H	3- 222	1, 0, 1← 0, 0, 0	Ground					24 306.2	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Excited		3/2		3/2	24 307.8	
Cl ³⁵ F ₃ ¹⁹	4-1371	5, 2, 3← 5, 1, 4	Ground		7/2		7/2	24 308.65	.15
Cl ³⁵ F ₃ ¹⁹	4-1371	5, 2, 3← 5, 1, 4	Ground		13/2		13/2	24 309.12	.15
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					24 310.	20.
Cl ³⁵ F ₃ ¹⁹	4-1371	5, 2, 3← 5, 1, 4	Ground		9/2		9/2	24 310.05	.15
Cl ³⁵ F ₃ ¹⁹	4-1371	5, 2, 3← 5, 1, 4	Ground		11/2		11/2	24 310.43	.15
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	5, ← 4,	Ground					24 311.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 313.3	.1
C ¹³ H ₃ C ¹² H ₂ C ¹² H ₃	3- 782	3, 1, 2← 3, 0, 3	Ground					24 315.01	.06
C ¹² HDCI ³⁵ Si ²⁸ H ₃	3- 236	4, 0, 4← 3, 0, 3	Ground					24 316.27	.2
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited					24 316.76	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 317.	5.
C ₆ ¹² H ₅ Cl ³⁷	4-1272	9, 2, 8← 8, 2, 7	Ground					24 318.	5.0
C ¹³ H ₃ S ³² H	3- 222	1, 0, 1← 0, 0, 0	Ground					24 318.5	
S ³² O ₂ ¹⁶	4-1831	Not Reported						24 319.67	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 320.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 320.57	.1
Cl ³⁵ F ₃ ¹⁹	4-1371	6, 2, 4← 6, 1, 5	Ground		7/2		7/2	24 320.70	.15
Cl ³⁵ F ₃ ¹⁹	4-1371	6, 2, 4← 6, 1, 5	Ground		15/2		15/2	24 321.86	.15
C ¹² H ₃ S ³² D	3- 223	1, 0, 1← 0, 0, 0	Ground					24 322.2	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	13, 9, 4←13, 9, 5	Ground					24 322.79	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 323.2	.3

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' _I	F' _F	F _I	F		
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	13, 9, 4←13, 9, 5	Ground					24 323.70	.1
s-C ¹² DH ₂ C ¹² H ₂ C ¹² H ₃	3- 785	3, 1, 2← 3, 0, 3	Ground					24 324.96	.06
a-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 204	3, 0, 3← 2, 0, 2	Ground					24 325.20	2.
C ¹² H ₁₃ N ¹⁴	4-1311	5, ← 4,	Excited					24-325.7	
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Ground					24 325.921	.002
Cl ³⁵ F ₃ ⁹	4-1371	6, 2, 4← 6, 1, 5	Ground		9/2		9/2	24 326.60	.15
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Ground		3/2		3/2	24 327.1	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	4, 2, 2← 4, 1, 3	Ground					24 327.14	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	Not Reported	Ground		3/2		3/2	24 327.2	
Cl ³⁵ F ₃ ⁹	4-1371	6, 2, 4← 6, 1, 5	Ground		13/2		13/2	24 328.15	.15
a-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 204	3, 0, 3← 2, 0, 2	Ground					24 328.18	2.
C ¹² H ₃ S ³² D	3- 223	1, 0, 1← 0, 0, 0	Ground					24 330.3	
O ¹⁶ C ¹² Se ⁷⁷	4- 544	3← 2	Ground					24 331.38	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						24 334.	3.
C ¹² D ₃ I ¹²⁷	4- 482	2, 0← 1, 0	Ground		5/2		5/2	24 336.26	.08
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	3, 2, 2← 3, 0, 3	Ground					24 336.87	.1
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	11, 7, 4←11, 7, 5	Ground					24 337.70	.2
Cs ¹³³ Cl ³⁷	1-	6← 5	Excited					24 337.9	1.5
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 338.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 338.	5.
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	8, 8, 1← 8, 6, 2	Ground					24 338.1	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						24 340.	3.
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 0← 3, 2, 1	Ground					24 340.3	.3
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 3← 3, 2, 2	Ground					24 342.40	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	4, 2, 2← 3, 2, 1	Ground					24 344.40	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						24 345.15	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Excited		5/2		5/2	24 345.6	
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	6, ← 5,	Ground					24 346.4	.3
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						24 349.08	.1
C ¹² H ₁₃ N ¹⁴	4-1311	5, ← 4,	Excited					24 349.6	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						24 349.84	.1
H ₂ C ¹² *O ¹⁶ C ¹³ *H ₂	4- 842	2, 1, 1← 2, 0, 2	Ground					24 352.2	.3
Si ²⁹ D ₃ F ¹⁹	4-1555	1, ← 0.	Ground					24 352.2	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	3, 1, 3← 2, 0, 2	Excited					24 352.94	.03
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 353.3	.3
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited		9/2		7/2	24 353.5	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Excited		3/2		1/2	24 353.60	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Excited		9/2		7/2	24 353.60	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						24 354.0	.2
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited					24 355.50	
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					24 356.14	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 357.4	.3
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	3, 1, 3← 2, 0, 2	Ground					24 358.82	.03
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					24 361.0	.3
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	3, 2, 2← 3, 1, 3	Ground					24 362.48	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ C ¹² HDC ¹² N ¹⁴	3- 733	3, 1, 2← 2, 1, 1	Ground					24 362.51	.1
O ¹⁶ C ¹² Se ⁷⁷	4- 544	3← 2	Excited					24 363.97	.03
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		24 365.0	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	5/2		5/2		24 365.1	
C ¹² H ₃ C ¹² H ₂ C ¹² H ₃	3- 781	3, 1, 2← 3, 0, 3	Ground					24 365.47	.03
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 2← 2, 1, 1	Ground	11/2		9/2		24 365.64	.030
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		24 366.331	.060
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 2← 2, 1, 1	Ground	7/2		7/2		24 366.331	.060
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					24 366.5	1.
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		24 366.80	.050
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		24 366.80	.050
Mn ⁵⁵ O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1562	3, 1, 2← 2, 1, 1	Ground	9/2		9/2		24 367.89	.030
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	5, 0, 5← 4, 1, 4	Ground					24 368.57	.05
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						24 369.	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 369.4	.1
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						24 369.61	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 371.6	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 1, 1← 1, 0, 1	Ground	3/2		1/2		24 372.39	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		24 372.9	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Ground	3/2		1/2		24 372.9	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	9/2		7/2		24 373.0	
C ¹² D ₃ I ¹²⁷	4- 482	2, 1← 1, 1	Ground	3/2		3/2		24 373.36	.08
S ³² C ¹² Se ⁷⁸	4- 563	6← 5	Ground					24 376.	4.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 376.5	
S ³² ₂ HC ¹² :C ¹² HC ¹² H:C ¹² ₂ H	4-1161	6, 2, 5← 6, 2, 4	Ground					24 377.0	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						24 377.18	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 1, 1← 1, 0, 1	Ground	5/2		5/2		24 377.65	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2		5/2		24 377.9	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Excited	5/2		3/2		24 378.0	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Excited	7/2		5/2		24 378.0	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 1, 1← 1, 0, 1	Ground	1/2		1/2		24 379.38	
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 0, 3← 2, 0, 2	Ground					24 380.36	.03
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 1, 7← 7, 2, 6	Ground	7		6		24 380.58	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 1, 7← 7, 2, 6	Ground	9		8		24 380.58	.10
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 0, 3← 2, 0, 2	Ground					24 380.63	.03
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited					24 381.07	
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	7, 1, 7← 8, 0, 8	Ground					24 381.5	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 1, 7← 7, 2, 6	Ground	8		7		24 381.78	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 382.16	.1
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	2, 1, 2← 1, 1, 1	Excited					24 382.5	.1
O ¹⁶ C ¹² Se ⁷⁷	4- 544	3← 2	Excited					24 383.21	.03
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						24 383.24	.01
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Ground					24 383.26	.05
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 3, 8←11. 2. 9	Ground					24 383.97	.2
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						24 384.04	.01

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 1, 1← 1, 0, 1	Ground		7/2	5/2		24 384.64	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 1, 1← 1, 0, 1	Ground		7/2	5/2		24 384.7	.05
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , ← 2, ,	Ground					24 384.9	.1
HDO ¹⁷	4-1714	3, , ← 2, ,	Ground					24 384.9	.5
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 3, 8←11, 2, 9	Ground					24 384.93	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						24 385.	3.
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						24 385.	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 1, 1← 1, 0, 1	Ground					24 385.21	.03
Ge ⁷⁰ H ₃ Br ⁷⁹	4- 101	5, ← 4,	Ground					24 385.54	1.
C ¹² H ₃ S ³² D	3- 223	1, 0, 1← 0, 0, 0	Ground					24 385.9	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 386.	5.
S ³² C ¹² Se ⁷⁸	4- 563	6← 5	Excited					24 386.	4.
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	7, 5← 6, 5	Ground					24 386.10	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	4, 2, 2← 3, 2, 1	Ground					24 387.2	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	7, 4← 6, 4	Ground					24 387.83	.1
C ¹³ H ₃ S ³² H	3- 222	1, 0, 1← 0, 0, 0	Ground					24 388.0	
C ¹² H ₃ S ³² D	3- 223	1, 0, 1← 0, 0, 0	Ground					24 388.3	
C ¹³ H ₃ S ³² H	3- 222	1, 0, 1← 0, 0, 0	Ground					24 389.1	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	7, 3← 6, 3	Ground					24 389.17	.1
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 2, 2← 2, 2, 1	Ground					24 389.35	.03
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 389.65	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	7, 2← 6, 2	Ground					24 390.12	.1
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	7/2	2	5/2	1	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	7/2	4	5/2	3	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	13/2	8	11/2	7	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	13/2	7	11/2	6	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	13/2	6	11/2	5	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	13/2	5	11/2	4	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	11/2	7	9/2	6	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	11/2	6	9/2	5	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	11/2	5	9/2	4	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	11/2	4	9/2	3	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	9/2	6	7/2	5	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	9/2	5	7/2	4	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	9/2	4	7/2	3	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	9/2	3	7/2	2	24 390.37	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Excited	7/2	3	5/2	2	24 390.37	0.20
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 1, 1← 1, 0, 1	Ground		5/2		3/2	24 390.43	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	7, 1← 6, 1	Ground					24 390.68	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	7, 0← 6, 0	Ground					24 390.85	.1
C ¹² H ₃ N ¹⁴	4-1311	5, ← 4,	Excited					24 391.4	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	9, 3, 6← 9, 2, 7	Excited					24 392.35	.03
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 2, 2← 2, 2, 1	Ground					24 392.8	.03
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H	3- 931	3, 2, 1← 2, 2, 0	Ground					24 393.2	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	3, 1, 3← 2, 0, 2	Ground					24 393.53	.03

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	6, 1, 5← 6, 1, 6	Ground		24 393.70	.10
C ¹² H ₂ DC ¹² HDF ¹⁹	3- 557	6, 1, 6← 5, 2, 3	Ground		24 395.	1.
C ¹² HCl ³⁷ F ¹⁹	4- 252	2, 1, 1← 1, 0, 1	Ground	3/2 3/2	24 395.56	
H ₂ C ^b *O ¹⁶ C ^b *H ₂ ^b	4- 846	Not Reported	Excited		24 395.8	.3
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 5← 7, 5	Excited		24 396.19	
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 2, 1← 2, 2, 0	Ground		24 396.90	.03
C ¹² D ₃ C ¹³ :C ¹² C ¹² F ₃ ¹⁹	3- 895	10, ← 9,	Ground		24 397.0	.5
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Ground	5/2 3/2	24 397.25	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	3, 1, 2← 2, 1, 1	Ground	7/2 5/2	24 397.25	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2 5/2	24 397.3	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 1← 7, 1	Excited		24 399.00	
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	9/2 4 7/2 3	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	11/2 5 9/2 4	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	11/2 7 9/2 6	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	7/2 4 5/2 3	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	7/2 2 5/2 1	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	9/2 6 7/2 5	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	11/2 6 9/2 5	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	13/2 8 11/2 7	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	13/2 7 11/2 6	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	13/2 5 11/2 4	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	13/2 6 11/2 5	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	11/2 4 9/2 3	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	7/2 3 5/2 2	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	9/2 5 7/2 4	24 399.00	0.20
Ga ⁷¹ Br ⁷⁹	1-	5← 4	Ground	9/2 3 7/2 2	24 399.00	0.20
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	10, 9, 2←10, 7, 3	Ground		24 399.77	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported			24 400.	10.
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited		24 401.0	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 7← 7, 7	Excited		24 401.33	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	5, 5, 1← 5, 3, 2	Ground		24 401.7	
Tl ²⁰⁵ I ¹²⁷	1-	15←14	Ground	29/2 27/2	24 402.36	0.10
Tl ²⁰⁵ I ¹²⁷	1-	15←14	Ground	25/2 23/2	24 402.36	0.10
Tl ²⁰⁵ I ¹²⁷	1-	15←14	Ground	27/2 25/2	24 402.36	0.10
Tl ²⁰⁵ I ¹²⁷	1-	15←14	Ground	31/2 29/2	24 403.14	0.10
Tl ²⁰⁵ I ¹²⁷	1-	15←14	Ground	35/2 33/2	24 403.14	0.10
Tl ²⁰⁵ I ¹²⁷	1-	15←14	Ground	33/2 31/2	24 403.14	0.10
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground		24 403.2	1.
Tl ²⁰⁵ I ¹²⁷	1-	15←14	Ground	35/2 33/2	24 403.20	0.10
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 4← 7, 4	Excited		24 403.55	
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	2, 1, 1← 2, 0, 2	Ground		24 405.	5.
C ¹² DH ₂ C ¹² HDF ¹⁹	3- 562	7, 1, 7← 6, 2, 4	Ground		24 405.0	.1
S ³² C ¹² Se ⁷⁸	4- 563	6← 5	Excited		24 406.	4.
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	8, 6← 7, 6	Excited		24 406.83	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	8, 7, 2← 8, 5, 3	Ground		24 408.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 3←7, 3	Excited					24 409.80	
O ¹⁶ C ¹² Se ⁷⁶	4-543	3←2	Ground					24 410.58	
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	7, 6, 2←7, 5, 3	Ground					24 410.9	
O ¹⁶ C ¹² S ³²	4-521	2←1	Excited					24 411.	2.
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3-461	8, 7, 2←8, 5, 3	Ground					24 412.3	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 5←7, 5	Excited					24 412.92	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 2←7, 2	Excited					24 414.46	
S ³² O ¹⁶ F ¹⁹ ₂	4-1621	Not Reported						24 416.70	.1
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 4←7, 4	Excited					24 416.85	
s-C ¹² H ₂ DSi ²⁸ HF ¹⁹ ₂	3-203	3, 1, 3←2, 1, 2	Ground					24 417.34	2.
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 1←7, 1	Excited					24 418.65	
N ¹⁴ H ₂ C ¹² H ₅	3-631	Not Reported	Ground					24 418.80	.2
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 3←7, 3	Excited					24 419.31	
S ³² O ¹⁶ F ¹⁹ ₂	4-1621	8, 5, 3←8, 5, 4	Ground					24 419.36	.1
C ¹² H ₃ N ¹⁴ O ¹⁶ ₂	3-171	Not Reported	Ground					24 420.	5.
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3-398	2, 1, 2←1, 1, 1	Ground					24 420.07	.2
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3-774	12, 2, 10←12, 1, 11	Ground					24 420.34	.2
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 2←7, 2	Excited					24 420.40	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 2←7, 2	Excited					24 422.33	
C ¹² H ₃ C ¹³ :C ¹² C ¹² F ¹⁹ ₃	3-894	9, ←8,	Ground					24 422.5	.5
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 5←5, 5	Ground					24 422.83	.1
C ^b H ₂ :C ^b HBr ^b	4-752	Not Reported	Ground		7/2		7/2	24 423.4	
C ¹² H ₂ :C ¹² HBr ⁸¹	4-728	3, 1, 2←2, 1, 1	Excited		7/2		7/2	24 423.4	
(C ¹² H ₃) ₂ O ¹⁶	3-591	Not Reported	Ground					24 425.	20.
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 4←5, 4	Ground					24 425.03	.1
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3-461	2, 1, 2←1, 1, 1	Ground					24 425.7	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 3←5, 3	Ground					24 426.69	.1
C ¹² H ₂ :C ¹² F ¹⁹ Cl	4-632	3, 2, 2←3, 1, 3	Ground					24 427.38	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 2←5, 2	Ground					24 427.85	.1
C ¹² H ₃ N ¹⁴ O ¹⁶ ₂	3-171	Not Reported	Ground					24 428.	5.
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 1←5, 1	Ground					24 428.60	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 0←5, 0	Ground					24 428.82	.1
O ¹⁶ C ¹² Se ⁷⁵	4-542	3←2	Ground		5/2		5/2	24 429.58	.05
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3-393	11, 7, 4←11, 7, 5	Ground					24 435.85	.2
C ¹² H ₃ N ¹⁴ O ¹⁶ ₂	3-171	Not Reported	Ground					24 437.80	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4-901	Not Reported	Ground					24 438.0	.1
C ¹² H ₁₃ Br ⁸¹	4-1332	17, ←16,	Excited					24 441.	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3-351	8, 1, 7←8, 0, 8	Ground		13/2		13/2	24 442.49	.15
C ^b H ₂ :C ^b HBr ^b	4-752	Not Reported	Ground		7/2		7/2	24 442.9	
O ¹⁶ C ¹² Se ⁷⁶	4-543	3←2	Excited					24 442.98	.03
C ¹² H ₂ :C ¹² HBr ⁸¹	4-728	3, 1, 2←2, 1, 1	Ground		7/2		7/2	24 443.0	
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4-491	8, 1←7, 1	Excited					24 444.32	
C ¹² H ₃ N ¹⁴ O ¹⁶ ₂	3-171	Not Reported	Ground					24 445.	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4-901	Not Reported	Ground					24 445.2	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 1, 7← 8, 0, 8	Ground	13/2		13/2		24 445.67	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 1, 7← 8, 0, 8	Ground	19/2		19/2		24 445.67	
C ¹² D ₃ N ¹⁴ D ₂	3- 262	7, 1, 7← 7, 0, 7	Ground					24 446.85	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 447.4	
C ¹² *DHC ¹² H:C ¹² *H	4-1034	4, 2, 2← 4, 2, 3	Ground					24 449.1	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 1, 7← 8, 0, 8	Ground	19/2		19/2		24 449.17	.15
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 449.6	.3
C ¹² DHC ₂ ³⁵	4- 344	2, 1, 1← 2, 0, 2	Ground					24 450.	5.
C ¹² H ₃ Si ³⁰ H ₂ F ¹⁹	3- 243	2, 0, 2← 1, 0, 1	Ground					24 451.59	.10
C ¹² H ₃ C ¹² HDF ¹⁹	3- 552	2, 1, 1← 2, 0, 2	Ground					24 454.2	.1
O ¹⁶ C ¹² Se ⁷⁵	4- 542	3← 2	Ground	3/2		3/2		24 455.21	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						24 456.	3.
C ¹² H ₃ S ³² D	3- 223	1, 0, 1← 0, 0, 0	Ground					24 456.0	
C ^b H ₂ :C ^b HBr ⁷⁹	4- 753	Not Reported	Ground	3/2		3/2		24 457.1	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Ground	3/2		3/2		24 457.1	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 1, 7← 8, 0, 8	Ground	15/2		15/2		24 458.58	.15
O ¹⁶ C ¹² S ³²	4- 521	2← 1	Excited					24 459.	2.
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	6, 3, 3← 6, 3, 4	Ground					24 460.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 1, 7← 8, 0, 8	Ground	17/2		17/2		24 461.41	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 1, 7← 8, 0, 8	Ground	15/2		15/2		24 462.07	.15
O ¹⁶ C ¹² Se ⁷⁶	4- 543	3← 2	Excited					24 462.42	.03
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 1, 7← 8, 0, 8	Ground	17/2		17/2		24 464.90	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Ground	3/2		3/2		24 465.33	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 465.58	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					24 469.0	1.5
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 1← 5, 1	Excited					24 469.11	.1
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	11, 4, 7←11, 4, 8	Ground					24 470.	5.
H ₂ N ¹⁵ C ¹² HO ¹⁶	3- 156	4, 0, 4← 3, 1, 3	Ground					24 470.30	
O ¹⁶ C ¹² Se ⁷⁵	4- 542	3← 2	Ground	9/2		7/2		24 471.31	.05
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , ← 2, ,	Ground					24 472.6	.2
HDO ¹⁷	4-1714	3, , ← 2, ,	Ground					24 472.6	.5
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					24 472.7	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 472.77	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	2, 1, 2← 1, 1, 1	Ground					24 473.8	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	28,20, 8←28,20, 9	Ground					24 475.02	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	7, 3, 4← 7, 2, 5	Ground					24 475.25	.03
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 4← 5, 4	Excited					24 475.95	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	28,20, 8←28,20, 9	Ground					24 477.02	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 2← 5, 2	Excited					24 479.62	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 4← 5, 4	Excited					24 479.62	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 480.0	
O ¹⁶ C ¹² Se ⁷⁵	4- 542	3← 2	Ground	11/2		9/2		24 480.45	.05
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 1← 5, 1	Excited					24 480.78	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 3← 5, 3	Excited					24 480.78	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 0← 5, 0	Excited					24 481.52	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₃ C ¹² C ¹² ; C ¹² C ¹² ; C ¹² H	4-1191	6, 2← 5, 2	Excited					24 481.52	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Excited	5/2		5/2		24 483.0	
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	7/2	5	5/2	4	24 483.58	0.20
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	55,18,37←55,18,38	Ground					24 484.	5.
F ¹⁹ O ₂ ¹⁵	3- 11	1, 1, 1← 0, 0, 0	Excited					24 484.06	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 242	2, 0, 2← 1, 0, 1	Ground					24 484.70	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	22,14, ←23,13,	Ground					24 484.77	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					24 485.0	.1
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	4, 1, 3← 3, 1, 2	Ground					24 485.10	.2
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	4, 0, 4← 3, 0, 3	Ground					24 485.55	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	22,14, ←23,13,	Ground					24 485.56	.1
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	9/2	5	7/2	4	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	9/2	4	7/2	3	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	9/2	3	7/2	2	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	7/2	4	5/2	3	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	7/2	3	5/2	2	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	7/2	2	5/2	1	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	11/2	4	9/2	3	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	9/2	6	7/2	5	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	13/2	6	11/2	5	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	13/2	5	11/2	4	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	11/2	7	9/2	6	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	11/2	6	9/2	5	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	11/2	5	9/2	4	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	13/2	8	11/2	7	24 486.56	0.20
Ga ⁶⁹ Br ⁸¹	1-	5← 4	Ground	13/2	7	11/2	6	24 486.56	0.20
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 3← 3, 2, 2	Ground					24 489.58	
s-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 395	9, 5, 4← 9, 5, 5	Ground					24 490.4	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 490.9	.1
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					24 491.2	.5
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 0, 2← 1, 0, 1	Ground					24 492.10	.10
C ¹² H ₂ :C ¹² HBr ^b	4- 752	Not Reported	Excited	9/2		7/2		24 492.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Excited	3/2		1/2		24 492.55	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Excited	9/2		7/2		24 492.55	
C ¹² D ₃ I ¹²⁷	4- 482	2, 1← 1, 1	Ground	1/2		3/2		24 493.36	.08
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	6, 1← 5, 1	Excited					24 494.38	.1
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	10, 1, 9←10, 0,10	Ground					24 495.28	.2
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .E	3- 702	5, 1, 4← 5, 0, 5						24 498.38	.2
C ¹² H ₂ :C ¹² HBr ^b	4- 752	Not Reported	Ground					24 500.0	.3
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 0, 2← 1, 0, 1	Ground					24 500.10	.10
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	8, 7, 2← 8, 5, 3	Ground					24 501.3	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Ground	5/2		5/2		24 502.3	
C ¹² H ₂ :C ¹² HBr ^b	4- 752	Not Reported	Ground	5/2		5/2		24 502.4	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 506.	5.
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	9/2		7/2		24 506.75	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	7/2	5/2			24 506.75	
Si ²⁸ D ₃ F ¹⁹	4-1554	1, ← 0,	Ground					24 507.0	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 507.3	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Ground	5/2	5/2			24 507.38	
C ¹² ₃ D:C ¹² DC ¹² D:C ¹² DN ¹⁴ ₃ H	4-1185	10,10, 1←10, 9, 2	Ground					24 507.5	
S ³² C ¹² Se ⁷⁷	4- 564	6← 5	Ground					24 508.	4.
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	6, 1, 5← 6, 0, 6	Ground					24 508.91	
C ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 2, 8← 8, 2, 7	Ground					24 509.3	
Sb ¹²³ Cl ₃ ³⁵	4-1542	7, ← 6,	Ground					24 510.	10.0
C ¹² ₃ H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² ₃ O ¹⁶	4-1241	4, 1, 3← 3, 1, 2	Ground					24 510.9	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Ground	3/2	1/2			24 511.95	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Ground	9/2	7/2			24 511.95	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	9/2	7/2			24 512.0	
F ¹⁹ N ¹⁴ N ¹⁴ F ¹⁹	3- 21	15, 5,10←15, 4,12	Ground					24 512.5	.3
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	9, 3, 6← 9, 2, 7	Ground					24 512.80	.03
O ¹⁶ C ¹² Se ⁷⁴	4- 541	3← 2	Ground					24 514.67	.03
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	4, 0, 4← 3, 0, 3	Ground					24 514.76	.2
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	5, 1, 4← 5, 0, 5						24 515.44	.2
O ¹⁶ C ¹² Se ⁷⁵	4- 542	3← 2	Ground	7/2	5/2			24 517.93	.05
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 0, 2← 1, 0, 1	Ground					24 519.10	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 520.75	.1
S ³² C ¹² Se ⁷⁷	4- 564	6← 5	Excited					24 521.	4.
HC ¹² O ¹⁶ O ¹⁶ C ¹² D ₃ -A	3- 507	5, 1, 4← 5, 0, 5	Ground					24 521.48	.2
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Excited	7/2	5/2			24 521.5	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Excited	5/2	3/2			24 521.5	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Excited	7/2	5/2			24 521.6	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Ground					24 524.28	.05
S ³² C ¹² Se ⁷⁷	4- 564	6← 5	Excited					24 527.	4.
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					24 528.6	
C ¹² H ₂ :C ¹² HBr ^b	4- 751	3, , ← 2, ,	Ground					24 528.8	.2
HDO ¹⁷	4-1714	3, , ← 2, ,	Ground					24 528.8	.5
C ¹² D ₃ N ¹⁴ D ₂	3- 262	7, 1, 7← 7, 0, 7	Ground					24 531.04	
C ¹² ₃ D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ ₃	4-1092	5, 4, 2← 5, 3, 3	Excited					24 531.6	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 532.	5.
N ¹⁴ H ₃	4-1771	5, 5← 5, 5	Ground					24 532.98	.02
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground					24 533.1	
O ¹⁶ F ¹⁹	4-1611	15, 2,14←14, 3,11	Ground					24 533.39	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 533.7	.1
4d-C ¹² H ₅ F ¹⁹	4-1283	6, 2, 5← 5, 2, 4	Ground					24 535.6	.1
As ⁷⁵ Cl ₃ ³⁷	4- 14	6, ← 5,	Ground					24 536.	2.
C ¹² H ₃ C ¹² ₃ HO ¹⁶ C ¹² ₃ H ₂	3- 761	2, 1, 2← 1, 1, 1	Ground					24 536.55	.1
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	6, ← 5,	Ground					24 538.1	.3
DC ¹² N ¹⁴	4- 292	11←11	Excited					24 538.92	.05
C ¹² D ₃ C ¹² :C ¹² C ¹³ F ¹⁹ ₃	3- 896	10, ← 9,	Ground					24 539.0	.5
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 539.2	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F' ₁	F		
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	4, 0, 4← 3, 0, 3	Ground					24 539.45	.2
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground		7/2		5/2	24 541.1	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Ground		7/2		5/2	24 541.1	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Ground		5/2		3/2	24 541.1	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	5/2		3/2		24 541.18	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	3/2		1/2		24 541.18	
Cs ¹³³ Cl ³⁷	1-	6← 5	Excited					24 541.40	.50
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 543.3	.3
D ₂ O ₂ ¹⁶	3- 42	Not Reported						24 545.	3.
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	6, 6, 1← 6, 4, 2	Ground					24 553.2	.5
N ¹⁵ H ₃	4-1772	7, 7← 7, 7	Ground					24 553.42	.02
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	7, 4, 3← 7, 4, 4	Ground					24 553.93	.1
Sb ¹²¹ Cl ₃ ³⁵	4-1541	7, ← 6,	Ground					24 554.	10.0
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	6, 6, 1← 6, 4, 2	Ground					24 554.6	.5
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					24 563.5	.5
O ¹⁶ C ¹² Se ⁷⁵	4- 542	3← 2	Ground		5/2		3/2	24 565.87	.03
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 1, 4← 5, 1, 5						24 568.99	.03
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	25,12, ←24,13,	Ground					24 570.46	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	25,12, ←24,13,	Ground					24 571.27	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 571.3	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Ground	7/2		5/2		24 573.86	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Ground	9/2		7/2		24 573.86	
O ¹⁶ C ¹² Se ⁷⁴	4- 541	3← 2	Ground					24 574.86	
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	7/2	2	5/2	1	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	7/2	3	5/2	2	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	7/2	4	5/2	3	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	9/2	3	7/2	2	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	9/2	4	7/2	3	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	9/2	5	7/2	4	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	9/2	6	7/2	5	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	11/2	4	9/2	3	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	11/2	5	9/2	4	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	11/2	6	9/2	5	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	11/2	7	9/2	6	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	13/2	5	11/2	4	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	13/2	6	11/2	5	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	13/2	7	11/2	6	24 576.08	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	13/2	8	11/2	7	24 576.08	0.20
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 578.6	
C ¹² DH ₂ C ¹² HDF ¹⁹	3- 562	2, 1, 1← 2, 0, 2	Ground					24 580.2	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 581.4	.3
C ¹² D ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 892	10, ← 9,	Ground					24 582.8	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Ground	3/2		3/2		24 583.00	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	7, 3, 4← 7, 2, 5	Excited					24 583.80	.03
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	8, 6, 2← 8, 5, 3	Ground					24 587.82	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₂	F ₁	F		
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 591.78	.1
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	5, 1, 4← 5, 1, 5	Ground					24 591.85	.35
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	7, 5, 2← 7, 5, 3	Ground					24 592.	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 195	3, 1, 3← 2, 1, 2	Ground					24 592.56	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 592.85	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	Not Reported						24 595.	5.
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	3, 1, 2← 3, 1, 3	Ground					24 595.1	.3
C ¹² D ₃ N ¹⁴ D ₂	3- 262	7, 1, 7← 7, 0, 7	Ground					24 595.38	
C ^b H ₂ :C ^b HBr ^b	4- 752	Not Reported	Ground	7/2		7/2		24 595.7	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	3, 1, 2← 2, 1, 1	Ground	7/2		7/2		24 595.70	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 599.	5.
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	5, 1, 4← 5, 0, 5	Ground					24 601.24	
S ³² C ¹² Se ⁷⁶	4- 565	6← 5	Ground					24 602.	4.
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	16,12, 4←16,12, 5	Ground					24 602.0	.1
DC ¹² :C ¹² C ¹² N ¹⁵	4- 891	3← 2	Ground					24 602.45	
C ₆ H ₅ O ¹⁶ H	3-1051	8, 4, 5← 8, 3, 6	Ground					24 604.4	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 605.	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	3, 1, 3← 2, 0, 2	Ground					24 605.75	.2
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	5, 1, 4← 5, 1, 5	Ground					24 605.93	.35
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 663	Not Reported	Ground					24 607.2	1.5
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 607.5	.1
C ¹² D ₃ I ¹²⁷	4- 482	2, 0← 1, 0	Ground		3/2		5/2	24 608.61	.08
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Ground	3/2		1/2		24 608.92	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Ground	5/2		3/2		24 608.92	
C ¹² H ₃ N ¹⁴ C ¹² S ³⁴	3- 425	5, , ← 4, ,	Ground					24 609.	
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	2, 0, 2← 1, 0, 1	Ground					24 612.25	.2
S ³² C ¹² Se ⁷⁶	4- 565	6← 5	Excited					24 614.	4.
s-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 203	3, 0, 3← 2, 0, 2	Ground					24 620.48	2.
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	10, 7, 3←10, 7, 4	Ground					24 621.7	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	3/2		1/2		24 622.93	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	9/2		7/2		24 622.93	
HDO ₂ ¹⁶	3- 43	19, , ←19, ,						24 624.	3.
F ₂ O ₂ ¹⁶	3- 11	1, 1, 1← 0, 0, 0	Ground					24 626.32	.1
S ³² C ¹² Se ⁷⁶	4- 565	6← 5	Excited					24 627.	4.
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	4, 1, 3← 3, 1, 2	Ground					24 631.06	.2
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						24 632.7	.2
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Ground	5/2		5/2		24 633.71	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	7, 1, ← 7, 1,	Ground					24 634.04	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 638.7	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	9, 6, 3← 9, 5, 4	Ground					24 638.80	.05
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 639.8	.3
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					24 640.	20.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 640.1	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 641.2	.1
C ¹² H ₂ DCI ³⁵	4- 428	1, 0, 1← 0, 0, 0	Ground					24 641.70	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	6, 3, 3← 6, 3, 4	Ground					24 642.79	.1
DC ¹³ :C ¹² C ¹² N ¹⁴	4- 887	3← 2	Ground					24 643.29	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	9/2		7/2		24 645.82	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	3/2		1/2		24 645.82	
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						24 646.	5.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 646.04	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	7, 1, ← 7, 1,	Ground					24 647.08	
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	5, 0, 5← 4, 1, 4	Ground					24 653.6	.3
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 1, 6← 7, 0, 7	Ground					24 653.60	.1
C ¹² H ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 891	9, ← 8,	Ground					24 654.5	.1
Cs ¹³³ Cl ³⁷	1-	6← 5	Excited					24 654.86	.30
s-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 677	9, 3, 6← 9, 2, 7	Ground					24 655.85	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	8, 1, 7← 8, 0, 8	Ground					24 656.01	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 656.31	.1
C ¹² Cl ³⁵ F ¹⁹	4- 191	5, ← 4,	Ground					24 657.26	.03
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	3, 1, 2← 2, 2, 1	Ground					24 657.4	
C ¹² H ₂ :C ¹² HCC ¹² F ¹⁹ :C ¹² H ₂	3- 911	9, 3, 6← 9, 2, 7	Excited					24 657.75	.03
C ¹² H ₃ N ¹⁴ O ₂ ⁶	3- 171	Not Reported	Ground					24 658.	5.
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 2← 3, 0, 3	Ground					24 658.69	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	5/2		3/2		24 658.89	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	7/2		5/2		24 658.89	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					24 660.	20.
C ¹² H ₂ DCF ³⁵	4- 428	1, 0, 1← 0, 0, 0	Ground					24 660.33	
HC ¹² N ¹⁴	4- 291	10←10	Excited					24 660.37	.05
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					24 661.2	1.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 1, 6← 7, 0, 7	Ground					24 663.52	.1
H ₂ C ¹² *O ¹⁶ C ¹³ *H ₂	4- 842	3, 3, 0← 3, 2, 1	Ground					24 667.9	.3
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	5, 3, 2← 5, 2, 3	Ground					24 668.	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 2, 4← 6, 1, 5	Ground		5		6	24 669.18	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 670.0	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 2, 4← 6, 1, 5	Ground		4		5	24 670.63	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 2, 4← 6, 1, 5	Ground		6		7	24 670.63	.10
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	11, 3, 8←11, 2, 9	Ground					24 672.6	1.
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	13/2	8	11/2	7	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	13/2	6	11/2	5	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	13/2	5	11/2	4	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	11/2	7	9/2	6	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	13/2	7	11/2	6	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	11/2	6	9/2	5	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	11/2	5	9/2	4	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	11/2	4	9/2	3	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	9/2	6	7/2	5	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	9/2	4	7/2	3	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	7/2	4	5/2	3	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	7/2	2	5/2	1	24 673.55	0.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	9/2	5	7/2	4	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	9/2	3	7/2	2	24 673.55	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Excited	7/2	3	5/2	2	24 673.55	0.20
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 8, 1← 8, 8, 0	Ground					24 674.5	.5
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 8, 2← 8, 8, 1	Ground					24 674.5	.5
C ¹² H ₂ DCl ³⁵	4- 428	1, 0, 1← 0, 0, 0	Ground					24 675.25	
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹³ D	3-1075	5, ← 4,	Ground					24 675.4	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					24 678.02	.1
N ¹⁴ H ₃	4-1771	17,15←17,15	Ground					24 680.1	.1
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	2, 1, 1← 1, 1, 0	Ground					24 681.03	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	5/2		3/2		24 682.13	
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Excited	7/2		5/2		24 682.13	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	5, 2, 3← 5, 2, 4	Ground					24 682.55	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	5, 5, 0← 5, 4, 1	Ground					24 682.8	
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground		11/2		11/2	24 683.33	.05
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	3, 0, 3← 2, 1, 2	Ground					24 684.6	.2
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 7, 2← 8, 7, 1	Ground					24 685.6	.5
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 7, 3← 8, 7, 2	Ground					24 685.6	.5
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	7, 1, 6← 7, 0, 7	Ground					24 687.	5.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 687.00	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	5/2		3/2		24 687.11	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	3/2		1/2		24 687.11	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	4, 2, 3← 3, 2, 2	Ground					24 687.66	.2
HC ¹² N ¹⁴	4- 291	10←10	Excited					24 689.96	.1
(C ¹² H ₃) ₃ C ¹² O ¹⁶	3- 751	Not Reported						24 691.	5.
C ₈ ¹² H ₁₃ Br ⁷⁹	4-1331	17, ←16,	Excited					24 691.	
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	10, 3, 7←10, 2, 8	Ground					24 691.50	
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	13, 2,11←13, 1,12	Ground					24 691.6	.1
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					24 691.9	.5
a-C ¹² H ₂ DC ¹² O ¹⁶ C ¹² N ¹⁴	3- 679	10, 3, 7←10, 2, 8	Ground					24 692.58	
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	13, 2,11←13, 1,12	Ground					24 693.2	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 694.31	.1
N ¹⁴ H ₂ C ₂ ¹² H ₅	3- 631	Not Reported	Ground					24 695.13	.2
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					24 700.	20.
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 6, 4← 8, 6, 3	Ground					24 702.7	.5
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 6, 3← 8, 6, 2	Ground					24 702.7	.5
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	4, 1, 3← 4, 1, 4	Ground					24 703.35	.1
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	3, 2, 1← 3, 1, 2	Ground		3/2		3/2	24 704.2	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	1, 1, 0← 0, 0, 0	Ground					24 705.86	.1
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	7, 1, 6← 7, 0, 7	Ground		15/2		15/2	24 706.90	.05
HDO ₂ ⁶	3- 43	19, , ←19, ,						24 707.	3.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 707.	5.
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	3, 2, 1← 3, 1, 2	Ground		9/2		9/2	24 708.2	.3

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		24 711.31	.05
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	3, 2, 1← 3, 1, 2	Ground	5/2		5/2		24 712.3	.5
Si ²⁸ D ₂ F ¹⁹	4-1603	5, 1, 4← 5, 0, 5	Ground					24 712.75	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Ground	7/2		5/2		24 713.05	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Ground	9/2		7/2		24 713.05	
F ¹⁹ O ₂ ¹⁶	3- 11	1, 1, 1← 0, 0, 0	Ground					24 715.57	.1
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	8, 4, 5← 8, 3, 6	Ground					24 715.9	
C ¹² HCl ³⁵ :C ¹² F ¹⁹	4- 611	3, 2, 1← 3, 1, 2	Ground	7/2		7/2		24 716.3	.5
Br ⁸¹ C ¹² N ¹⁴	4- 142	3← 2	Ground	7/2		7/2		24 717.19	
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	4, 1, 3← 3, 1, 2	Ground	7/2	9/2	5/2	7/2	24 718.0	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	4, 1, 3← 3, 1, 2	Ground	5/2	11/2	3/2	9/2	24 718.0	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	4, 1, 3← 3, 1, 2	Ground					24 718.01	.2
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	6, 1, 5← 6, 0, 6	Ground					24 719.31	
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	9, 6, 3← 9, 5, 4	Ground					24 720.3	
Si ³⁰ H ₃ Br ⁸¹	4- 116	3, ← 2,	Ground					24 720.57	.08
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	9, 3, 6← 9, 2, 7	Ground					24 722.25	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	31,10,21←31,10,22	Ground					24 723.	5.
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	10, 4, 6←10, 3, 7	Ground	21/2		21/2		24 725.0	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	10, 4, 6←10, 3, 7	Ground	19/2		19/2		24 725.0	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	10, 4, 6←10, 3, 7	Ground	17/2		17/2		24 725.0	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	10, 4, 6←10, 3, 7	Ground	23/2		23/2		24 725.0	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H ₂ :C ¹² *H	4-1157	9, 8, 2← 9, 7, 3	Ground					24 726.7	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 0, 2← 1, 0, 1	Ground					24 727.07	.1
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	7, 1, 6← 7, 0, 7	Ground	17/2		17/2		24 728.53	.05
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 0, 2← 1, 0, 1	Ground					24 728.61	.1
H ₂ C ¹² :C ¹² F ¹⁹	4- 681	Not Reported						24 729.2	.3
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	4, 3, 2← 4, 1, 3	Excited					24 730.0	.1
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	3, 2, 2← 2, 2, 1	Ground					24 730.6	.1
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	7, 1, 6← 7, 0, 7	Ground	15/2		15/2		24 731.52	.05
C ¹² D ₃ C ¹² H ₂ Br ⁸¹	3- 525	7, 1, 6← 7, 0, 7	Ground	11/2		11/2		24 731.62	.05
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 5, 5← 8, 5, 4	Ground					24 732.1	.5
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 5, 4← 8, 5, 3	Ground					24 732.1	.5
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	7, 3, 4← 7, 2, 5	Ground					24 732.10	.03
C ¹² H ₃ As ⁷⁵ F ¹⁹	3- 81	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		24 733.01	.2
C ¹² H ₃ As ⁷⁵ F ¹⁹	3- 81	3, 0, 3← 2, 0, 2	Ground	5/2		5/2		24 733.01	.2
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	1, 1, 0← 1, 0, 1	Ground					24 735.6	.1
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		24 736.91	.05
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	11,10, 2←11, 9, 3	Ground					24 737.3	
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	11/2		9/2		24 738.20	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	3/2		3/2		24 738.20	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	9/2	9/2	24 738.20	.05		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	7/2	9/2	24 738.20	.05		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	5/2	3/2	24 738.20	.05		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	1/2	3/2	24 738.20	.05		
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	5, 0, 5← 4, 1, 4	Ground			24 739.8	1.		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	5/2	5/2	24 740.60	.05		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	7/2	5/2	24 740.60	.05		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	3/2	5/2	24 740.60	.05		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	7/2	7/2	24 741.49	.05		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	9/2	7/2	24 741.49	.05		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	5/2	7/2	24 741.49	.05		
C ¹³ HCl ³⁵ F ₂ ¹⁹	4- 253	2, 1, 1← 1, 0, 1	Ground			24 742.15	.05		
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported				24 746.	5.		
C ₆ H ₅ Cl ³⁷	4-1272	9, 6, 4← 8, 6, 3	Ground			24 746.	5.0		
C ₆ H ₅ Cl ³⁷	4-1272	9, 6, 3← 8, 6, 2	Ground			24 746.	5.0		
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	12, 2,10←12, 1,11	Ground			24 747.74	.2		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3← 2, 0, 2	Ground	9/2	7/2	24 748.55	.2		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3← 2, 1, 2	Ground	9/2	7/2	24 748.55	.2		
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 0, 2← 1, 0, 1	Ground			24 749.12	.1		
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 1, 6← 7, 0, 7	Ground			24 749.23	.1		
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground			24 750.	20.		
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 1, 6← 7, 0, 7	Ground			24 750.32	.1		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3← 2, 0, 2	Ground	9/2	7/2	24 750.91	.2		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3← 2, 1, 2	Ground	9/2	7/2	24 750.91	.2		
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	3, 1, 2← 2, 1, 1	Ground			24 751.	5.		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3← 2, 0, 2	Ground	9/2	7/2	24 752.13	.2		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3← 2, 1, 2	Ground	9/2	7/2	24 752.13	.2		
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	4, 1, 3← 3, 1, 2	Ground			24 752.39	.2		
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Ground	3/2	1/2	24 755.22			
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Ground	5/2	3/2	24 755.22			
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	1/2	1/2	24 755.95	.15		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 2← 2, 2	Excited	3/2	1/2	24 755.95	.15		
s-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 395	2, 0, 2← 1, 0, 1	Ground			24 756.10	.2		
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	9, 6, 3← 9, 6, 4	Ground			24 757.1			
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	7, 1, 6← 7, 0, 7	Ground	17/2	17/2	24 757.70	.05		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3← 2, 1, 2	Ground	3/2	1/2	24 757.70	.2		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3← 2, 0, 2	Ground	3/2	1/2	24 757.70	.2		
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported				24 758.	5.		
C ¹² H ₂ F ₂ ¹⁹	4- 351	15, 3,13←14, 4,10	Ground			24 760.40	.10		
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	3/2	1/2	24 760.76			
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	9/2	7/2	24 760.76			
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3← 2, 0, 2	Ground	7/2	5/2	24 761.98	.2		
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3← 2, 1, 2	Ground	7/2	5/2	24 761.98	.2		
C ¹² *H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *H	4-1184	9, 6, 3← 9, 6, 4	Ground			24 762.6			

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F				Frequency MHz	Acc. ± MHz
C ¹² D ₃ C ¹² H ₂ Br ⁷⁹	3- 523	7, 1, 6 ← 7, 0, 7	Ground	11/2	11/2			24 762.80	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 764.3	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3 ← 2, 1, 2	Ground	7/2	5/2			24 764.87	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3 ← 2, 0, 2	Ground	7/2	5/2			24 764.87	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3 ← 2, 0, 2	Ground	7/2	5/2			24 766.40	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3 ← 2, 1, 2	Ground	7/2	5/2			24 766.40	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	11,11, 1 ← 11, 9, 2	Ground					24 767.50	
Cs ¹³³ Cl ³⁷	1-	6 ← 5	Ground					24 767.86	.10
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	1/2	1/2			24 768.00	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	3/2	3/2			24 768.00	.05
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	7/2	5	5/2	4	24 768.02	0.20
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	11/2	9/2			24 768.38	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	9/2	7/2			24 769.14	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	3/2	1/2			24 769.14	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	7/2	7/2			24 769.14	.05
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3 ← 2, 0, 2	Ground	5/2	3/2			24 769.26	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3 ← 2, 1, 2	Ground	5/2	3/2			24 769.26	.2
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	7/2	5/2			24 769.55	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	5/2	3/2			24 769.55	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 1 ← 2, 1	Excited	9/2	9/2			24 770.68	.05
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	6, 4, 2 ← 6, 4, 3	Ground					24 771.0	.3
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	13/2	6	11/2	5	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	13/2	5	11/2	4	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	9/2	5	7/2	4	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	13/2	8	11/2	7	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	13/2	7	11/2	6	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	11/2	6	9/2	5	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	9/2	6	7/2	5	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	11/2	7	9/2	6	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	7/2	2	5/2	1	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	11/2	5	9/2	4	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	11/2	4	9/2	3	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	9/2	4	7/2	3	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	9/2	3	7/2	2	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	7/2	4	5/2	3	24 771.22	0.20
Ga ⁶⁹ Br ⁷⁹	1-	5 ← 4	Ground	7/2	3	5/2	2	24 771.22	0.20
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0 ← 2, 0	Ground	3/2	5/2			24 771.56	.1
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3 ← 2, 0, 2	Ground	5/2	3/2			24 771.88	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3 ← 2, 1, 2	Ground	5/2	3/2			24 771.88	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 772.	5.
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0 ← 2, 0	Ground	1/2	3/2			24 772.39	.1
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0 ← 2, 0	Ground	5/2	5/2			24 773.505	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0 ← 2, 0	Ground	5/2	3/2			24 773.85	.15
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0 ← 2, 0	Ground	9/2	7/2			24 774.250	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0← 2, 0	Ground		11/2		9/2	24 774.445	.05
Si ²⁹ D ₂ F ₂ ¹⁹	4-1604	5, 1, 4← 5, 0, 5	Ground					24 774.80	.10
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0← 2, 0	Ground		7/2		5/2	24 775.125	.05
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0← 2, 0	Ground		5/2		3/2	24 775.949	.05
C ₆ ¹² H ₅ Cl ³⁷	4-1272	9, 5, 4← 8, 5, 3	Ground					24 776.	5.0
C ₆ ¹² H ₅ Cl ³⁷	4-1272	9, 5, 5← 8, 5, 4	Ground					24 776.	5.0
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 776.46	.1
Mn ⁵⁵ O ₃ ¹⁶ F ¹⁹	4-1561	3, 0← 2, 0	Ground		9/2		9/2	24 777.526	.05
D ₂ O ₂ ¹⁶	3- 42	Not Reported						24 778.	3.
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	2, 0, 2← 1, 0, 1	Ground					24 778.2	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 783.	5.
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	9/2		7/2		24 784.02	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	3/2		1/2		24 784.02	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 4← 5, 4	Ground		6		5	24 784.37	
s-(C ¹² H ₂ D)(C ¹² H ₃ O) ¹⁶	3- 596	Not Reported	Ground					24 785.	20.
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 4← 5, 4	Ground		7		6	24 785.14	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 4← 5, 4	Ground		5		4	24 785.14	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	8, 6, 2← 8, 5, 3	Ground					24 785.55	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 3← 5, 3	Ground		6		5	24 786.31	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 3← 5, 3	Ground		7		6	24 786.61	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 3← 5, 3	Ground		5		4	24 786.61	
Si ³⁰ D ₃ N ¹⁴ C ¹² S ³²	4- 493	9, ← 8,	Ground					24 786.84	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 2← 5, 2	Ground					24 787.85	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 1← 5, 1	Ground					24 788.51	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	6, 0← 5, 0	Ground					24 788.69	
DC ¹³ :C ¹² C ¹² HO ¹⁶	4- 917	3, 1, 3← 2, 1, 2	Ground					24 790.45	.02
Nb ⁹² O ₂ Cl ^{1b}	4-1463	Not Reported						24 791.	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 196	3, 0, 3← 2, 0, 2	Ground					24 793.40	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 195	3, 0, 3← 2, 0, 2	Ground					24 794.63	
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 1, 2← 2, 1, 1	Ground					24 796.20	.03
C ₆ ¹² H ₅ C ¹² :C ¹² H	3-1091	9, 4, 5← 8, 4, 4	Ground					24 796.4	.5
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Ground	7/2	5	7/2	5	24 796.70	0.30
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	3, 1, 2← 2, 1, 1	Ground					24 797.09	.03
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	12, 8, 4←12, 7, 5	Ground					24 801.8	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	12, 9, 4←12, 8, 5	Ground					24 801.8	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground		3/2		1/2	24 801.9	.05
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground		3/2		1/2	24 802.17	
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Ground	7/2	3	7/2	3	24 802.17	0.30
Ga ⁶⁹ Br ⁷⁹	1-	5← 4	Ground	7/2	2	7/2	2	24 802.17	0.30
2,4,6d ₃ -C ₆ ¹² H ₅ F ¹⁹	4-1284	7, 1, 7← 6, 1, 6	Ground					24 802.5	.1
N ¹⁴ H ₂ C ₂ ¹² H ₅	3- 631	Not Reported	Ground					24 802.94	.2
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	6, 2, 4← 6, 2, 5	Ground					24 803.0	.05
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	5/2		3/2		24 803.00	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	7/2		5/2		24 803.00	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	1, 1, 1← 0, 0, 0	Ground					24 804.00	.1
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	2, 1, 2← 1, 1, 1	Ground					24 805.5	.3
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	5/2		5/2		24 808.7	.05
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 1← 1, 0, 1	Ground	5/2		5/2		24 808.76	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						24 809.7	.3
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	1/2		1/2		24 810.8	.05
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	1/2		1/2		24 810.96	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 812.	5.
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 2, 3← 5, 1, 4	Excited					24 812.0	.1
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	2, 1, 1← 1, 1, 0	Ground					24 814.44	.10
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	7/2		5/2		24 817.4	.05
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	7/2		5/2		24 817.64	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground					24 818.34	.03
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 1, 3← 2, 1, 2	Ground	7/2		7/2		24 819.80	.2
C ¹² H ₃ As ⁷⁵ F ₂ ¹⁹	3- 81	3, 0, 3← 2, 0, 2	Ground	7/2		7/2		24 819.80	.2
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	3, 1, 2← 3, 0, 3	Ground					24 820.	5.
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	9, 3, 6← 9, 2, 7	Ground	15/2		15/2		24 822.00	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	9, 3, 6← 9, 2, 7	Ground	17/2		17/2		24 822.00	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	9, 3, 6← 9, 2, 7	Ground	19/2		19/2		24 822.00	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	9, 3, 6← 9, 2, 7	Ground	21/2		21/2		24 822.00	.2
C ¹³ H ₃ N ¹⁴ C ¹² S ³²	3- 426	5, , ← 4, ,						24 824.	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 824.0	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						24 824.59	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	5/2		3/2		24 824.9	.05
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	5/2		3/2		24 825.06	
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	9, 3, 6← 9, 2, 7	Ground	17/2		17/2		24 825.58	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	9, 3, 6← 9, 2, 7	Ground	19/2		19/2		24 825.58	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	9, 3, 6← 9, 2, 7	Ground	15/2		15/2		24 825.58	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	9, 3, 6← 9, 2, 7	Ground	21/2		21/2		24 825.58	.2
C ¹² D ₃ N ¹⁴ D ₂	3- 262	7, 1, 7← 7, 0, 7	Ground					24 826.54	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	7/2		5/2		24 826.70	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	5/2		3/2		24 826.70	
C ₆ ¹² H ₅ Cl ³⁷	4-1272	9, 3, 7← 8, 3, 6	Ground					24 827.	5.0
C ₆ ¹² H ₅ Cl ³⁷	4-1272	9, 4, 6← 8, 4, 5	Ground					24 827.	5.0
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	3, 2, 2← 2, 2, 1	Ground					24 827.8	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 830.1	.1
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	3/2		3/2		24 831.2	.05
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 1, 1← 1, 0, 1	Ground	3/2		3/2		24 831.37	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 832.14	.1
C ₆ ¹² H ₅ Cl ³⁷	4-1272	9, 4, 5← 8, 4, 4	Ground					24 834.	5.0
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	4, 3, 1← 4, 2, 2	Ground					24 834.26	.03
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 1, 2← 3, 0, 3	Ground	3/2		3/2		24 835.97	.05
Si ³⁰ D ₂ F ₂ ¹⁹	4-1605	5, 1, 4← 5, 0, 5	Ground					24 836.28	.10
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		24 838.76	.05
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 1, 2← 3, 0, 3	Ground	5/2		5/2		24 842.03	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 1, 2← 3, 0, 3	Ground		7/2		7/2	24 844.87	.05
HC ¹³ ;C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 847.	5.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 852.9	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	7, 1, 6← 6, 2, 5	Ground					24 856.0	.2
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 2, 6← 8, 1, 7	Ground					24 858.1	.2
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	5/2		3/2		24 860.6	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	3/2		3/2		24 860.6	
C ¹³ H ₃ O ¹⁶ H	3- 213	28, 2, ←28, 1,	Ground					24 860.62	.1
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	6, 2, 5← 5, 2, 4	Ground					24 860.7	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	9, 4, 5← 9, 3, 6	Ground	15/2		15/2		24 862.10	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	9, 4, 5← 9, 3, 6	Ground	21/2		21/2		24 862.10	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	11, 8, 4←11, 7, 5	Ground					24 863.4	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	11, 7, 4←11, 6, 5	Ground					24 863.4	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	9, 4, 5← 9, 3, 6	Ground	17/2		17/2		24 865.15	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	9, 4, 5← 9, 3, 6	Ground	19/2		19/2		24 865.15	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 1, 6← 7, 0, 7	Ground					24 869.10	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground	7/2		5/2		24 869.49	.05
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					24 870.	1.
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	2, 1, 2← 1, 0, 1						24 871.11	.4
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	4, 3, 2← 4, 1, 3	Ground					24 872.5	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	4, 2, 2← 3, 2, 1	Ground					24 874.53	.2
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					24 875.	20.
P ³¹ Cl ₃ ³⁷	4-1524	5, ← 4,	Ground					24 875.	1.
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 1, 2← 1, 0, 1	Ground					24 876.48	.04
Cl ³⁷ O ₂ ¹⁶	4-1382	7, 1, 6← 6, 2, 5	Ground					24 876.8	.2
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	9, 1, 9← 8, 1, 8	Ground					<u>24 877.4</u>	.3
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		24 877.60	.05
C ¹² DHC ₂ ³⁵	4- 344	3, 1, 2← 3, 0, 3	Ground					24 878.	5.
C ¹² H ₃ S ³⁴ H	3- 225	1, 0, 1← 0, 0, 0	Ground					24 878.9	
Ge ⁷⁶ H ₃ Cl ³⁷	4-1434	3, ← 2,	Ground					24 879.0	.5
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 879.62	
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	2, 1, 2← 1, 1, 1	Ground					24 879.75	.2
C ¹² H ₃ S ³⁴ H	3- 225	1, 0, 1← 0, 0, 0	Ground					24 879.8	
N ¹⁴ H ₃	4-1771	11,10←11,10	Ground					24 881.90	.02
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Ground	7/2		7/2		24 884.57	
HDO ¹⁶	4-1712	8, 4, 4← 8, 4, 5	Ground					24 884.77	.05
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	7, 3, 4← 7, 2, 5	Excited					24 887.38	.03
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 1, 2← 1, 0, 1	Ground					24 888.30	.04
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		24 888.45	.05
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	11,10, 2←11, 8, 3	Ground					24 888.97	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 889.42	.04
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 4, 2← 5, 3, 3	Ground					24 889.50	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground	9/2		9/2		24 889.69	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 889.80	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	7/2		7/2		24 890.0	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3- 461	2, 0, 2← 1, 0, 1	Excited					24 894.3	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	Not Reported						24 895.	5.
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	6, 3, 3← 6, 2, 4	Ground					24 895.46	
Si ³⁰ H ₃ Br ⁷⁹	4- 115	3, ← 2,	Ground					24 896.33	.08
S ³² O ¹⁶ F ¹⁹ ₂	4-1621	Not Reported						24 898.42	.1
Cl ³⁷ O ¹⁶ ₂	4-1382	7, 1, 6← 6, 2, 5	Ground					24 898.5	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	52,17,35←52,17,36	Ground					24 899.	5.
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	9, 4, 6← 9, 4, 5	Ground					24 899.3	.1
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 1, 2← 1, 0, 1	Ground					24 899.44	.04
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	9, 1, 8← 9, 0, 9	Ground					24 899.76	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	9, 3, 6← 9, 2, 7	Ground					24 899.85	.2
s-(C ¹² H ₂ D)(C ¹² H ₃ O ¹⁶)	3- 596	Not Reported	Ground					24 900.	20.
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						24 900.	10.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 901.	5.
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	9, 3, 6← 9, 2, 7	Ground					24 901.87	.2
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	2, 1, 2← 1, 0, 1						24 902.31	.4
HN ¹⁴ O ¹⁶ ₃	3- 31	7, 5, 2← 7, 5, 3	Ground					24 903.51	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	11, 1,10←11, 1,11	Ground					24 903.53	
C ¹² H ₃ Si ²⁸ DF ¹⁹ ₂ -A	3- 197	11, 6, 6←11, 6, 5	Ground					24 904.4	
2,4,6d ₃ -C ¹² H ₅ F ¹⁹	4-1284	7, 0, 7← 6, 0, 6	Ground					24 905.9	.1
C ¹² H ₃ Si ²⁸ DF ¹⁹ ₂ -E	3- 198	11, 6, 6←11, 6, 5	Ground					24 906.3	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						24 907.9	.5
C ¹² H ₂ Br ⁷⁹ ₂	4- 321	Not Reported	Ground					24 908.	
C ¹² D ₂ Cl ³⁵ ₂	4- 346	7, 1, 6← 7, 0, 7	Ground					24 908.	5.
C ¹² H ₃ N ¹⁴ C ¹² S ³⁴	3- 425	5, , ← 4, ,						24 910.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 910.	5.
Cs ¹³³ Cl ³⁵	1-	6← 5	Excited					24 911.2	.6
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 8, 1← 8, 8, 0	Ground					24 912.	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 8, 2← 8, 8, 1	Ground					24 912.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 913.	5.
C ¹² D ₃ N ¹⁴ H ₂	3- 263	4, , ← 3, ,						24 913.1	.5
C ¹² H ₃ Si ²⁸ DF ¹⁹ ₂ -A	3- 197	3, 1, 3← 2, 1, 2	Ground					24 914.95	
C ¹² H ₃ Si ²⁸ DF ¹⁹ ₂ -E	3- 198	3, 1, 3← 2, 1, 2	Ground					24 916.13	
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 1, 2← 1, 0, 1	Ground					24 916.41	.04
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground					24 916.68	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 8, 2← 8, 8, 1	Ground					24 917.1	.2
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 8, 1← 8, 8, 0	Ground					24 917.1	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 917.5	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground		3/2		1/2	24 918.05	.05
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	10, 1, 9←10, 1,10	Ground					24 919.07	.05
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground		11/2		9/2	24 919.85	.05
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	10, 1, 9←10, 1,10	Ground					24 920.20	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 0, 2← 1, 1, 1	Ground					24 920.64	.4
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	10, 7, 4←10, 6, 5	Ground					24 920.8	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	10, 6, 4←10, 5, 5	Ground					24 920.8	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	5, 1, 4← 5, 0, 5	Excited					24 921.75	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						24 923.34	
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	2, 1, 1← 2, 0, 2	Ground					24 923.66	.03
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 4, 2← 5, 3, 3	Ground					24 924.15	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	7, 1, 6← 6, 2, 5	Ground					24 924.6	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 926.	5.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						24 926.	5.
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	2, 0, 2← 1, 0, 1	Ground					24 926.6	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						24 928.22	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 2, 8← 8, 2, 7	Ground					24 928.7	
C ¹² H ₃ O ¹⁶ H	3- 211	3, 2, ← 3, 1,	Ground					24 928.70	.1
C ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 7, 2← 8, 7, 1	Ground					24 929.0	.2
C ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 7, 3← 8, 7, 2	Ground					24 929.0	.2
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	2, 1, 2← 1, 1, 1	Ground					24 929.38	.2
C ¹² H ₃ N ¹⁴ C ¹² S ³³	3- 424	5, , ← 4, ,	Ground					24 930.	
As ⁷⁵ Cl ³⁵ Cl ₂ ³⁷	4- 13	6, , ← 5, ,	Ground					24 932.	10.
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 1, 2← 1, 0, 1	Ground					24 932.50	.1
O ^b O ^b O ^b	4-1847	Not Reported						24 932.6	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 1, 5← 4, 1, 4	Ground	13/2		11/2		24 932.92	.15
C ¹² H ₃ O ¹⁶ H	3- 211	4, 2, ← 4, 1,	Ground					24 933.47	.1
C ¹² H ₃ O ¹⁶ H	3- 211	2, 2, ← 2, 1,	Ground					24 934.38	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 4, 2← 5, 3, 3	Ground					24 935.22	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 1, 2← 1, 0, 1	Ground					24 935.22	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						24 935.41	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 2← 5, 2	Ground	15/2		13/2		24 935.7	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 2← 5, 2	Ground	9/2		7/2		24 935.7	
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	7, 7, 1← 7, 5, 2	Ground					24 936.3	.5
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 1, 5← 4, 1, 4	Ground	7/2		5/2		24 936.55	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 1, 5← 4, 1, 4	Ground	11/2		9/2		24 937.28	.15
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	7, 7, 1← 7, 5, 2	Ground					24 937.3	.5
C ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 6, 4← 8, 6, 3	Ground					24 938.	
C ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 6, 3← 8, 6, 2	Ground					24 938.	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 1← 5, 1	Ground	15/2		13/2		24 939.6	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 1, 5← 4, 1, 4	Ground	9/2		7/2		24 940.70	.15
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 0← 5, 0	Ground	13/2		11/2		24 941.2	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 0← 5, 0	Ground	15/2		13/2		24 941.2	
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground	13/2		11/2		24 942.47	.05
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					24 943.	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 1← 5, 1	Ground	13/2		11/2		24 943.3	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	5, 4, 2← 5, 3, 3	Ground					24 943.63	.1
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	8, 2, 7← 9, 1, 8	Ground					24 947.	5.
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -E	3- 514	2, 1, 1← 1, 1, 0	Ground					24 947.31	.2
C ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 6, 4← 8, 6, 3	Ground					24 947.5	.2
C ¹² H ₅ C ^{1 2} N ¹⁴	4-1291	9, 6, 3← 8, 6, 2	Ground					24 947.5	.2
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 1← 5, 1	Ground	11/2		9/2		24 947.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	9, 6, 3← 9, 5, 4	Ground					24 949.51	.4
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 2← 5, 2	Ground		13/2		11/2	24 950.4	
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -A	3- 513	2, 1, 1← 1, 1, 0	Ground					24 950.66	.2
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	3, 2, 2← 3, 0, 3	Ground					24 950.7	.3
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	2, 1, 2← 1, 0, 1	Ground					24 950.96	.1
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	2, 0, 2← 1, 0, 1	Ground					24 951.6	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 954.6	
t-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 554	6, 1, 5← 6, 2, 4	Ground					24 955.0	.1
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	6, 3← 5, 3	Ground		11/2		9/2	24 955.4	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					24 955.5	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					24 959.	5.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	15,15, 1←15,14, 1						24 959.04	.1
C ¹² H ₃ O ¹⁶ H	3- 211	5, 2, ← 5, 1,	Ground					24 959.08	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	9, 6, 3← 9, 5, 4	Ground					24 959.57	.1
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	9, 4, 5← 9, 3, 6	Ground					24 960.08	.5
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 2, 3← 5, 1, 4	Ground					24 960.27	.1
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	9, 4, 5← 9, 3, 6	Ground					24 961.40	.5
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 1← 3, 2, 2	Ground	9/2	3	9/2	3	24 961.48	.1
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	9, 4, 5← 9, 3, 6	Ground					24 962.72	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 963.	5.
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² Cl ₂ ³⁵	3-1061	14, ←13,	Ground					24 967.1	.5
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						24 968.	3.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 968.	5.
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	12, 7, 6←12, 5, 7	Ground					24 968.	5.
S ³² F ₅ ¹⁹ Cl	4-1422	7, ← 6,	Ground					24 969.50	.5
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	9, 6, 4← 9, 5, 5	Ground					24 969.9	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	9, 5, 4← 9, 4, 5	Ground					24 969.9	
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	9, 6, 3← 9, 5, 4	Ground					24 969.90	.1
C ^b H ₃ N ^b C ^b S ^b	3- 426	5, , ← 4, ,						24 971.	
N ^b O ₂ Cl ^b	4-1463	Not Reported						24 971.	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	9, 3, 6← 9, 2, 7	Ground					24 971.91	.2
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 5, 4← 8, 5, 3	Ground					24 972.	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 5, 5← 8, 5, 4	Ground					24 972.	
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					24 972.	
Cl ³⁷ O ₂ ¹⁶	4-1382	7, 1, 6← 6, 2, 5	Ground					24 972.7	
As ⁷⁵ Cl ³⁵ Cl ₂ ³⁷	4- 13	Not Reported	Ground					24 973.	10.
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 1← 3, 2, 2	Ground	5/2	1	5/2	1	24 973.78	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 1← 3, 2, 2	Ground	9/2	5	9/2	5	24 973.78	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 1← 3, 2, 2	Ground	5/2	2	5/2	2	24 973.78	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 1← 3, 2, 2	Ground	5/2	4	5/2	4	24 973.78	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	9, 3, 6← 9, 2, 7	Ground					24 973.89	.2
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					24 975.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 977.	5.
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 5, 4← 8, 5, 3	Ground					24 978.6	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 5, 5← 8, 5, 4	Ground					24 978.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					24 980.	20.
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	5/2		5/2		24 981.5	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	7/2		5/2		24 981.5	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	3/2		5/2		24 981.5	
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					24 982.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						24 983.	5.
C ^b _* H ₂ ^b N ^b H ^b C ^b _* H ₂ ^b	4- 863	Not Reported						24 985.	10.
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	3, 3, 1← 3, 2, 2	Ground	7/2	3	7/2	3	24 985.83	.1
C ¹² _* DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ _*	4-1142	2, 2, 0← 1, 1, 1	Ground					24 986.1	
2,4,6d ₃ -C ¹² H ₅ F ¹⁹	4-1284	6, 5, 1← 5, 5, 0	Ground					24 987.5	.1
2,4,6d ₃ -C ¹² H ₅ F ¹⁹	4-1284	6, 5, 2← 5, 5, 1	Ground					24 987.5	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					24 988.5	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						24 990.58	.1
c-HDC ¹² :C ¹² HF ¹⁹	4- 787	5, 1, 4← 5, 1, 5	Ground					24 990.6	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground		7/2		7/2	24 991.87	.05
C ^b _* H ₂ ^b N ^b H ^b C ^b _* H ₂ ^b	4- 863	Not Reported						24 991.9	.5
C ¹² _* H:C ¹² DO ¹⁶ C ¹² D:C ¹² _* H	4-1156	12,10, 2←12, 9, 3	Ground					24 991.9	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					24 993.76	.1
C ¹² H ₃ C ¹² _* H ₂ O ¹⁶ C ¹² _* C ¹² H ₃	3- 951	7, 3, 5← 7, 2, 6	Ground					24 993.89	.2
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	6, 2, 4← 6, 1, 5	Ground					24 994.91	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					24 995.	20.
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3- 642	6, 2, 4← 6, 1, 5	Ground					24 996.80	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					24 997.	5.
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					25 000.	20.
C ¹² H ₃ N ¹⁴ C ¹³ S ³²	3- 423	5, , ← 4, ,	Ground					25 002.	
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 002.	
H ₂ C ^b _* O ¹⁶ C ^b _* H ₂ ^b	4- 846	Not Reported	Excited					25 002.2	.3
(C ¹² D ₃) ₃ C ¹² Cl ³⁷	3- 977	5, ← 4,	Ground					25 002.5	3.
S ³² C ¹² Te ¹³⁰	4- 577	8← 7	Excited					25 005.326	.010
Br ⁷⁹ C ¹² N ¹⁴	4- 141	3← 2	Excited	7/2		7/2		25 006.0	
Cl ³⁷ O ₂ ¹⁶	4-1382	7, 1, 6← 6, 2, 5	Ground					25 006.3	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 008.8	.1
C ¹² _* DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ _*	4-1142	8, 5, 4← 8, 4, 5	Ground					25 009.0	
C ¹² _* DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ _*	4-1142	8, 4, 4← 8, 3, 5	Ground					25 009.0	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					25 009.0	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² D	3-1078	5, 1, 5← 4, 1, 4	Ground					25 010.9	.1
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	1, 1, 1← 0, 0, 0	Ground					25 011.17	.10
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 013.	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 013.1	.1
S ³² C ¹² Te ¹³⁰	4- 577	8← 7	Excited					25 015.884	.010
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	2, 1, 1← 1, 1, 0	Ground					25 017.26	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 017.8	
C ¹² H ₃ O ¹⁶ H	3- 211	6, 2, ← 6, 1,	Ground					25 018.14	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 018.4	.1
C ^b _* H ₂ ^b N ^b H ^b C ^b _* H ₂ ^b	4- 863	Not Reported						25 020.	10.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					25 020.	20.
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	9, 3, 7← 9, 1, 8	Ground					25 020.2	.1
N ¹⁴ H ₂ D	4-1773	4, 1, 4← 4, 0, 4	Ground					25 023.88	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 024.1	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 025.	5.
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	25, 1,24←24, 2,23	Ground					25 025.0	
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	5, 3, 3← 6, 2, 4	Ground					25 025.1	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	7, 1, 6← 6, 2, 5	Ground					25 026.1	.2
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 2, 6← 8, 1, 7	Ground					25 027.10	.03
2,4,6d ₃ -C ₆ ¹² H ₅ F ¹⁹	4-1284	6, 3, 4← 5, 3, 3	Ground					25 027.3	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground		5/2		5/2	25 029.18	.05
Rb ⁸⁷ I ¹²⁷	1-	13←12	Excited					25 029.38	0.10
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					25 030.	20.
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 3, 7← 8, 3, 6	Ground					25 030.	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 4, 6← 8, 4, 5	Ground					25 030.	
C ¹² H ₃ Si ²⁶ DF ₂ ¹⁹ -E	3- 198	3, 0, 3← 2, 0, 2	Ground					25 030.55	
C ₈ ¹³³ Cl ³⁵	1-	6← 5	Excited					25 031.0	.6
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						25 032.4	.5
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	3, 0, 3← 2, 0, 2	Ground					25 032.63	
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 4, 6← 8, 3, 6	Ground					25 032.7	
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	25, 1,24←24, 2,23	Ground					25 033.4	
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 4← 3, 1, 3	Ground		3/2		3/2	25 034.06	.05
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					25 035.	20.
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	25, 1,24←24, 2,23	Ground					25 035.8	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	7, 4, 4← 7, 3, 5	Ground					25 038.4	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	7, 3, 4← 7, 2, 5	Ground					25 038.4	
Rb ⁸⁵ I ¹²⁷	1-	13←12	Excited					25 038.99	0.10
D ₂ O ₂ ¹⁶	3- 42	Not Reported						25 040.	3.
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	5, 1, 4← 5, 0, 5	Ground					25 040.66	.05
Cl ³⁷ O ₂ ¹⁶	4-1382	7, 1, 6← 6, 2, 5	Ground					25 041.0	.2
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 042.	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						25 042.0	.5
C ₆ ¹² H ₅ C ¹² N ¹⁴	4-1291	9, 4, 5← 8, 4, 4	Ground					25 044.	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 2, 1← 2, 2, 0	Ground					25 044.80	.1
S ³² O ₂ ¹⁶	4-1831	35, 6,30←34, 7,27	Ground					25 049.13	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 050.	5.
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	4, 1, 3← 3, 1, 2	Ground					25 050.53	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	7, 1, 6← 6, 2, 5	Ground					25 054.7	.2
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 056.	5.
N ¹⁴ H ₃	4-1771	6, 6← 6, 6	Ground					25 056.02	.02
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 056.31	.1
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	25, 1,24←24, 2,23	Ground					25 056.8	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 057.	5.
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	6, 2, 4← 6, 1, 5	Ground					25 058.5	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	6, 3, 4← 6, 2, 5	Ground					25 058.5	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² *H:C ¹² DO ¹⁶ C ¹² D:C ¹² *H	4-1156	7, 6, 2← 7, 5, 3	Ground					25 061.3	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					25 063.5	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					25 063.65	.04
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	3/2	3	3/2	3	25 063.76	.1
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	9/2	3	9/2	3	25 064.68	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 065.	5.
Ge ⁷⁴ H ₃ Cl ³⁷	4-1433	3, ← 2,	Ground					25 067.4	.5
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	25, 1,24←24, 2,23	Ground					25 068.18	
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	4, 1, 3← 3, 1, 2	Ground	7/2	9/2	5/2	7/2	25 068.4	.1
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	9/2	6	9/2	6	25 068.66	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	4, 1, 3← 3, 1, 2	Ground					25 068.86	.2
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						25 069.	
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	4, 1, 3← 3, 1, 2	Ground	5/2	11/2	3/2	9/2	25 069.3	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	Not Reported	Ground					25 069.6	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	5, 2, 4← 5, 1, 5	Ground					25 071.0	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	4, 0, 4← 3, 1, 3	Ground					25 071.0	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	5, 1, 4← 5, 0, 5	Ground					25 071.0	
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	4, 1, 4← 3, 0, 3	Ground					25 071.0	
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 072.	
Rb ⁸⁵ Br ⁸¹	1-	9← 8	Excited					25 072.63	0.10
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	9/2	4	9/2	4	25 073.68	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					25 075.0	1.
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	5/2	4	5/2	4	25 075.21	.1
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	9/2	5	9/2	5	25 075.21	.1
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	10, 3, 7←10, 2, 8	Ground					25 076.08	.2
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	4, 0, 4← 3, 0, 3	Ground					25 076.94	.2
C ^b H ₃ N ^b C ^b S ^b	3- 426	5, , ← 4, ,						25 077.	
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	9, 1, 8← 9, 0, 9	Ground	15/2		15/2		25 077.48	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						25 078.38	
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	9, 1, 8← 9, 0, 9	Ground	21/2		21/2		25 078.50	.05
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						25 078.51	.1
C ¹² H ₃ S ³³ H	3- 226	1, 0, 1← 0, 0, 0	Ground					25 078.7	
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	25, 1,24←24, 2,23	Ground					25 079.3	
C ¹² H ₃ S ³³ H	3- 226	1, 0, 1← 0, 0, 0	Ground					25 079.6	
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	13, 1,12←12, 2,11	Ground					25 079.7	
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	10, 3, 7←10, 2, 8	Ground					25 080.16	.2
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	5/2	3	5/2	3	25 080.68	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	9, 1, 8← 9, 0, 9	Ground					25 081.23	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						25 082.26	.1
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	7/2	5	7/2	5	25 082.38	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						25 083.	3.
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	9, 1, 8← 9, 0, 9	Ground	17/2		17/2		25 083.90	.05
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	9, 1, 8← 9, 0, 9	Ground	19/2		19/2		25 084.85	.05
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	7/2	3	7/2	3	25 085.93	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 087.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	3, 3, 1← 3, 2, 2	Ground	7/2	4	7/2	4	25 088.13	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						25 088.20	.1
C ¹² H ₂ Br ₂	4- 321	Not Reported	Ground					25 090.	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 0, 2← 1, 0, 1	Ground					25 091.	3.
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	10, 2, 8←10, 2, 9	Ground					25 091.04	.10
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	10, 2, 8←10, 2, 9	Ground					25 091.97	.10
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	4, 1, 3← 3, 1, 2	Ground					25 093.48	.2
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	13, 4, 9←13, 3,10	Ground					25 093.7	.5
N ^b O ₂ Cl ^b	4-1463	Not Reported						25 095.	
2,4,6d ₃ -C ₆ H ₅ F ¹⁹	4-1284	6, 4, 3← 5, 4, 2	Ground					25 096.7	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 096.8	.1
S ³² C ¹² Te ¹²⁸	4- 576	8← 7	Excited					25 097.805	.010
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	8, 7, 2← 8, 6, 3	Ground					25 099.3	
C ^b H ₃ N ^b C ^b S ^b	3- 426	5, , ← 4, ,						25 100.	
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 1, 3← 4, 0, 4	Ground					25 100.65	.02
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 103.	5.
C ¹² D ₃ Si ³⁰ DF ¹⁹	3- 202	3, 2, 2← 2, 2, 1	Ground					25 103.39	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 105.0	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 1, 5← 4, 1, 4	Ground	13/2		11/2		25 106.53	.15
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	4, 0, 4← 3, 0, 3	Ground					25 106.62	.2
C ¹² H ₃ B ^b F ¹⁹	3- 91	6, , ← 6, ,	Ground					25 107.2	.1
S ³² C ¹² Te ¹²⁸	4- 576	8← 7	Excited					25 108.444	.010
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	6, 1, 5← 6, 1, 6	Ground					25 110.42	.10
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 1, 5← 4, 1, 4	Ground	7/2		5/2		25 110.84	.15
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 111.	5.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 1, 5← 4, 1, 4	Ground	11/2		9/2		25 111.43	.15
Rb ⁸⁷ I ¹²⁷	1-	13←12	Excited					25 112.84	0.10
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	6, 1, 5← 6, 1, 6	Ground					25 113.08	.10
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	5, 1, 4← 5, 1, 5	Ground	5		5		25 113.15	.1
C ₆ H ₅ Cl ³⁷	4-1272	9, 3, 6← 8, 3, 5	Ground					25 114.	5.0
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	5, 1, 4← 5, 1, 5	Ground	6		6		25 115.24	.1
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	5, 1, 4← 5, 1, 5	Ground	4		4		25 115.24	.1
Re ¹⁸⁷ O ₃ ¹⁶ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	17/2	9	15/2	8	25 115.33	.1
Re ¹⁸⁷ O ₃ ¹⁶ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	17/2	8	15/2	7	25 115.33	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 1, 5← 4, 1, 4	Ground	9/2		7/2		25 115.74	.15
Rb ⁸⁷ Br ⁷⁹	1-	9← 8	Excited					25 116.57	0.10
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	9, 6, 3← 9, 5, 4	Ground					25 116.76	.1
Re ¹⁸⁷ O ₃ ¹⁶ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	17/2	10	15/2	9	25 117.36	.06
Re ¹⁸⁷ O ₃ ¹⁶ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	17/2	7	15/2	6	25 117.66	.04
Re ^b O ₃ ¹⁶ Cl ³⁵	4-1475	6, ← 5,						25 120.	
Re ¹⁸⁷ O ₃ ¹⁶ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	9/2	5	7/2	4	25 120.10	.1
Re ¹⁸⁷ O ₃ ¹⁶ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	9/2	4	7/2	3	25 120.10	.1
Na ²³ Cl ³⁷	1-	2← 1	Excited					25 120.3	0.75
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					25 121.4	.1
N ¹⁴ N ¹⁵ O ¹⁶	4-1812	1← 0	Ground					25 121.55	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	17/2		15/2		25 122.08	.05
C ¹² D ₃ Si ²⁹ DF ₂ ¹⁹	3- 201	3, 2, 2← 2, 2, 1	Ground					25 122.39	.2
N ₂ ¹⁴ O ¹⁶	4-1811	1← 0	Ground					25 123.25	
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	13/2	5	11/2	6	25 123.45	.20
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	13/2	8	11/2	9	25 123.45	.20
Rb ⁸⁵ I ¹²⁷	1-	13←12	Excited					25 123.45	0.10
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	17/2	10	15/2	9	25 124.35	.06
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	17/2	7	15/2	6	25 124.35	.06
C ¹² H ₃ O ¹⁶ H	3- 211	7, 2, ← 7, 1,	Ground					25 124.88	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	11/2	5	9/2	4	25 125.00	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	11/2	6	9/2	5	25 125.00	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	11/2	4	9/2	3	25 125.75	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	9/2	4	7/2	3	25 125.75	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	11/2	7	9/2	6	25 125.75	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	7/2	5	5/2	4	25 125.75	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	9/2	5	7/2	4	25 125.75	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	15/2	8	13/2	7	25 126.52	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	15/2	7	13/2	6	25 126.52	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	11/2	6	9/2	5	25 126.52	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	11/2	5	9/2	4	25 126.52	.1
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	1, 1, 1← 0, 0, 0	Excited					25 126.60	.10
C ¹² H ₃ S ³² H	3- 221	1, 0, 1← 0, 0, 0	Ground					25 126.9	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	9/2	3	7/2	2	25 127.03	.06
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 0← 5, 0	Ground	9/2	6	7/2	5	25 127.03	.06
C ¹² H ₂ Br ₂ ¹⁵	4- 321	Not Reported	Ground					25 128.	
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	11/2	6	9/2	5	25 128.15	.05
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	11/2	7	9/2	6	25 128.15	.05
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	15/2	6	13/2	5	25 128.15	.05
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	15/2	9	13/2	8	25 128.15	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 128.4	.1
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	17/2		15/2		25 129.42	.08
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	6	11/2	5	/2	25 129.47	.1
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	7	11/2	6	/2	25 129.47	.1
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	13/2	5	11/2	6	25 130.80	.2
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	13/2	8	11/2	9	25 130.80	.2
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	13/2	8	11/2	7	25 130.93	.06
Re ¹⁸⁷ O ₃ Cl ³⁵	4-1473	6, 3← 5, 3	Ground	13/2	5	11/2	4	25 130.93	.06
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 131.	5.
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	11/2	6	9/2	5	25 132.56	.1
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	11/2	5	9/2	4	25 132.56	.1
C ¹² _* HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² _* H ₂	4-1251	12, 6, 7←12, 4, 8	Ground					25 133.	5.
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					25 133.2	.5
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	11/2	4	9/2	3	25 133.38	.1
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	7/2	5	5/2	4	25 133.38	.1
Re ¹⁸⁵ O ₃ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	9/2	4	7/2	3	25 133.38	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	9/2	5	7/2	4	25 133.38	.1
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	11/2	7	9/2	6	25 133.38	.1
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	11/2	6	9/2	5	25 134.24	.1
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	15/2	8	13/2	7	25 134.24	.1
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	15/2	7	13/2	6	25 134.24	.1
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	11/2	5	9/2	4	25 134.24	.1
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	9/2	6	7/2	5	25 134.59	.07
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 0← 5, 0	Ground	9/2	3	7/2	2	25 134.59	.07
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	9, 6, 3← 9, 5, 4	Ground					25 135.0	
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	15/2	9	13/2	8	25 135.82	.06
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	11/2	7	9/2	6	25 135.82	.06
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	15/2	6	13/2	5	25 135.82	.06
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	11/2	6	9/2	5	25 135.82	.06
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	13/2	7	11/2	6	25 137.40	.1
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	13/2	6	11/2	5	25 137.40	.1
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	13/2	5	11/2	4	25 138.80	.07
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	6, 3← 5, 3	Ground	13/2	8	11/2	7	25 138.80	.07
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	3, 2, 2← 2, 2, 1	Ground					25 140.47	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² D	3-1078	5, 1, 4← 4, 1, 3	Ground					25 140.6	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	8, 3, 5← 8, 2, 6	Ground					25 141.40	.2
C ¹² H ₃ S ³² H	3- 221	1, 0, 1← 0, 0, 0	Ground					25 142.2	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	8, 3, 5← 8, 2, 6	Ground					25 142.58	.2
C ¹² H ₃ S ³² H	3- 221	1, 0, 1← 0, 0, 0	Ground					25 143.6	.1
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	6, 1, 5← 6, 0, 6	Ground					25 144.60	.20
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					25 145.18	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	Not Reported	Ground					25 145.6	
C ¹³ H ₃ C ¹² H ₃ Si ²⁸ H ₂	3- 646	6, 1, 5← 6, 0, 6	Ground					25 146.60	.20
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 147.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					25 149.28	.1
Cs ¹³³ Cl ³⁵	1-	6← 5	Excited					25 150.1	.6
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 3, 2← 5, 2, 3	Ground		7/2		7/2	25 150.65	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 151.	5.
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 152.	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 3, 2← 5, 2, 3	Ground		13/2		13/2	25 153.00	.2
C ¹² H ₃ S ³² H	3- 221	1, 0, 1← 0, 0, 0	Ground					25 154.8	.1
O ¹⁶ F ₂ ¹⁹	4-1611	14, 4, 11← 15, 3, 12	Ground					25 155.14	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 0, 2← 1, 0, 1	Ground					25 156.18	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 0, 2← 1, 1, 1	Ground					25 156.42	.4
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 156.6	.1
K ³⁹ I ¹²⁷	1-	7← 6	Excited					25 157.04	0.30
2,4,6-d ₃ -C ₆ H ₅ F ¹⁹	4-1284	6, 4, 2← 5, 4, 1	Ground					25 159.0	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 3, 2← 5, 2, 3	Ground		9/2		9/2	25 159.20	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					25 159.28	.1
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 160.	
C ¹² H ₃ Si ³⁰ HF ₂ ¹⁹	3- 194	3, 1, 3← 2, 1, 2	Ground					25 160.94	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ^b H ₃ N ^b C ^b S ^b	3- 426	5, , ← 4,						25 161.	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	6, 3← 5, 3	Ground	15/2	13/2			25 161.3	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	5, 3, 2← 5, 2, 3	Ground	11/2	11/2			25 161.60	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 162.1	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 0, 2← 1, 0, 1	Ground					25 165.43	.1
C ¹³ H ₃ Cl ³⁷	4- 427	1, ← 0,	Ground					25 167.68	.1
(C ¹² H ₃) ₃ C ¹² C ¹³ :C ¹² D	3-1076	5, ← 4,	Ground					25 168.2	.1
C ¹² H ₂ Br ₂ ^b	4- 321	Not Reported	Ground					25 170.	
C ¹² H ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	3, 1, 3← 2, 1, 2	Ground					25 170.35	
Rb ⁸⁵ Br ⁸¹	1-	9← 8	Excited					25 170.56	0.10
S ³² O ₂ ¹⁶	4-1831	Not Reported						25 170.97	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 0, 2← 1, 0, 1	Excited					25 171.	3.
C ¹² H ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	3, 1, 3← 2, 1, 2	Ground					25 171.55	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	34,11,23←34,11,24	Ground					25 172.	5.
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 1, 3← 2, 1, 2	Ground					25 172.11	.1
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	6, 1← 5, 1	Ground	15/2	13/2			25 173.3	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					25 173.4	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	6, 0← 5, 0	Ground	13/2	11/2			25 175.2	
(C ¹² H ₃) ₃ N ¹⁴ .B ¹¹ (C ¹² H ₃) ₃	3-1081	8, ← 7,						25 179.	10.
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	3, 1, 3← 2, 1, 2	Ground					25 179.49	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	3, 1, 3← 2, 1, 2	Ground					25,180.66	
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	9, 1, 8← 9, 0, 9	Ground	15/2	15/2			25 180.8	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	9, 1, 8← 9, 0, 9	Ground	21/2	21/2			25 181.6	.1
C ¹³ H ₃ Cl ³⁷	4- 427	1, ← 0,	Ground					25 182.50	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	9, 1, 8← 9, 0, 9	Ground					25 184.38	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 186.63	.2
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	6, 2← 5, 2	Ground	13/2	11/2			25 186.7	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 186.7	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	9, 1, 8← 9, 0, 9	Ground	17/2	17/2			25 187.0	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	9, 1, 8← 9, 0, 9	Ground	19/2	19/2			25 187.9	.1
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	6, 3← 5, 3	Ground	11/2	9/2			25 192.5	
DC ¹³ :C ¹² C ¹² HO ¹⁶	4- 917	3, 0, 3← 2, 0, 2	Ground					25 192.85	.02
S ³² C ¹² Te ¹²⁶	4- 575	8← 7	Excited					25 193.132	.010
C ¹³ H ₃ Cl ³⁷	4- 427	1, ← 0,	Ground					25 194.20	.1
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	5, 1, 5← 4, 1, 4	Ground					25 195.	
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	17, 2,15←18, 1,18	Ground					25 196.	
Rb ⁸⁷ I ¹²⁷	1-	13←12	Ground					25 196.01	0.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 0, 2← 1, 0, 1	Ground					25 196.48	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 197.3	.1
Rb ⁸⁵ Br ⁷⁹	1-	9← 8	Excited					25 197.32	0.10
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						25 197.90	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	15,11, 4←15,11, 5	Ground					25 198.9	.1
DC ¹³ :C ¹² C ¹² HO ¹⁶	4- 917	3, 2, 2← 2, 2, 1	Ground					25 199.51	.02
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						25 201.35	
DC ¹³ :C ¹² C ¹² HO ¹⁶	4- 917	3, 2, 1← 2, 2, 0	Ground					25 202.96	.02

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₂	F ₁	F		
C ¹² H ₂ Br ^b ₂	4- 321	Not Reported	Ground					25 203.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 203.	5.
S ³² C ¹² Te ¹²⁶	4- 575	8← 7	Excited					25 203.861	.010
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					25 206.62	.04
C ¹² H ₃ S ³² H	3- 221	1, 0, 1← 0, 0, 0	Ground					25 206.8	.1
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -E	3- 192	2, 1, 1← 1, 0, 1	Ground					25 207.67	
Rb ⁸⁵ I ¹²⁷	1-	13←12	Excited					25 207.88	0.20
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 1, 3← 2, 1, 2	Excited					25 208.13	.10
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	2, 1, 1← 1, 0, 1	Ground					25 208.47	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	17,15, 3←17,13, 4	Ground					25 209.6	.1
C ¹² *H ₂ C ¹² D:C ¹² *H	4-1032	5, 3, 2← 5, 3, 3	Ground					25 209.6	
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					25 210.8	.3
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 2, 6← 8, 1, 7	Ground					25 212.69	.03
Cl ³⁷ F ¹⁹ ₃	4-1372	7, 2, 5← 7, 1, 6	Ground		11/2		11/2	25 213.46	.15
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						25 213.53	
Rb ⁸⁷ Br ⁷⁹	1-	9← 8	Excited					25 214.65	0.10
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						25 214.92	.1
DC ¹² :C ¹² C ¹³ N ¹⁴	4- 889	3← 2	Ground					25 215.30	
Cl ³⁷ F ¹⁹ ₃	4-1372	7, 2, 5← 7, 1, 6	Ground		17/2		17/2	25 215.40	.15
H ₂ C ¹² :C ¹² Cl ^b ₂	4- 663	Not Reported	Ground					25 215.5	.5
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	Not Reported						25 218.	5.
C ¹² H ₃ S ³² H	3- 221	1, 0, 1← 0, 0, 0	Ground					25 219.7	.1
C ¹² H ₃ Ge ^b Cl ³⁵ Cl ³⁷	3- 105	8, 3, 6← 7, 2, 6						25 220.	15.
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					25 221.9	
Si ²⁹ H ₃ Br ⁸¹	4- 114	3, ← 2,	Ground					25 222.21	.08
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					25 222.45	.1
Cl ³⁷ F ¹⁹ ₃	4-1372	7, 2, 5← 7, 1, 6	Ground		13/2		13/2	25 222.97	.15
C ¹² H ₂ Br ^b ₂	4- 321	Not Reported	Ground					25 223.	
(C ¹² D ₃) ₂ O ¹⁶	3- 592	3, 0, 3← 2, 1, 2	Ground					25 223.6	.5
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	5, 3, 2← 5, 2, 3	Ground		7/2		7/2	25 223.87	.2
C ¹² H ₃ N ¹⁴ O ¹⁶ ₂	3- 171	Not Reported	Ground					25 224.	5.
Cl ³⁷ F ¹⁹ ₃	4-1372	7, 2, 5← 7, 1, 6	Ground		15/2		15/2	25 224.62	.15
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	5, 3, 2← 5, 2, 3	Ground		13/2		13/2	25 227.20	.2
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	12, 2,10←12, 2,11	Ground					25 228.77	.1
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	5, 3, 2← 5, 2, 3	Ground		9/2		9/2	25 230.51	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 0, 2← 1, 0, 1	Ground					25 232.90	.1
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	5, 3, 2← 5, 2, 3	Ground		11/2		11/2	25 232.97	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	49,16,33←49,16,34	Ground					25 234.	5.
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	12, 2,10←12, 2,11	Ground					25 234.17	.2
D ₂ O ¹⁶ ₂	3- 42	Not Reported						25 235.	3.
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	3, 2, 2← 2, 2, 1	Ground					25 238.6	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	8, 5, 3← 8, 4, 4	Ground					25 240.46	
S ³² C ¹² Te ¹²⁵	4- 574	8← 7	Excited					25 241.844	.010
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 1, 3← 2, 1, 2	Excited					25 244.25	.20
DC ¹² :C ¹³ C ¹² N ¹⁴	4- 888	3← 2	Ground					25 245.58	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F ₂ ' F ₁ F				Frequency MHz	Acc. ±MHz
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	6, 4, 1← 6, 4, 2	Ground					25 245.7	.3
H ₂ C ¹² *O ¹⁶ C ¹³ *H ₂	4- 842	4, 3, 1← 4, 2, 2	Ground					25 246.8	.3
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						25 247.2	.2
C ¹² H ₃ S ³² C ¹² D ₃	3- 606	5, 1, 4← 5, 0, 5	Ground					25 249.00	.05
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	2, 2, 0← 2, 1, 1	Ground	7/2		7/2		25 249.3	.3
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 1, 4← 4, 2, 3	Ground					25 249.7	.2
S ³² C ¹² Te ¹²⁵	4- 574	8← 7	Excited					25 252.608	.010
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	2, 2, 0← 2, 1, 1	Ground	3/2		3/2		25 254.3	.5
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	17, 2,15←16, 3,14	Ground					25 257.	
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	2, 2, 0← 2, 1, 1	Ground	3/2		5/2		25 257.2	.5
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	3, 2, 2← 2, 2, 1	Ground					25 260.5	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 261.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground	3		4		25 261.0	.2
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	2, 2, 0← 2, 1, 1	Ground	5/2		3/2		25 263.7	.5
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground					25 265.80	.05
C ¹² HCl ³⁵ :C ¹² F ₂ ¹⁹	4- 611	2, 2, 0← 2, 1, 1	Ground	5/2		5/2		25 266.9	.5
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						25 268.61	.1
Rb ⁸⁵ Br ⁸¹	1-	9← 8	Ground					25 268.84	0.10
K ³⁹ I ¹²⁷	1-	7← 6	Excited					25 268.95	0.15
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	5, , ← 4, ,	Ground					25 269.	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						25 270.	10.
Cs ¹³³ Cl ³⁵	1-	6← 5	Excited					25 270.0	.6
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 273.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground	4		5		25 274.6	.2
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						25 275.0	10.
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	7, 3, 4← 7, 2, 5	Ground					25 278.01	.2
C ¹² *D:C ¹² DC ¹² D:C ¹² DN ¹⁴ *H	4-1185	11,11, 0←11,10, 1	Ground					25 278.2	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	9, 3, 6← 9, 2, 7	Ground	15/2		15/2		25 279.18	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	9, 3, 6← 9, 2, 7	Ground	17/2		17/2		25 279.18	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	9, 3, 6← 9, 2, 7	Ground	21/2		21/2		25 279.18	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	9, 3, 6← 9, 2, 7	Ground	19/2		19/2		25 279.18	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 279.90	.2
C ¹² H ₃ Si ³⁰ HF ₂ ¹⁹	3- 194	3, 0, 3← 2, 0, 2	Ground					25 282.51	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	9, 3, 6← 9, 2, 7	Ground	15/2		15/2		25 282.92	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	9, 3, 6← 9, 2, 7	Ground	19/2		19/2		25 282.92	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	9, 3, 6← 9, 2, 7	Ground	17/2		17/2		25 282.92	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	9, 3, 6← 9, 2, 7	Ground	21/2		21/2		25 282.92	.2
C ¹² H ₃ Si ³⁰ HF ₂ ¹⁹	3- 194	3, 0, 3← 2, 0, 2	Ground					25 284.83	
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	3, 2, 1← 2, 2, 0	Ground					25 286.	5.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 289.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground	5		6		25 290.1	.2
C ¹² H ₃ S ³² H	3- 221	1, 0, 1← 0, 0, 0	Ground					25 290.8	.1
S ³² C ¹² Te ¹²⁴	4- 573	8← 7	Excited					25 291.465	.010
C ¹² H ₃ S ³² H	3- 221	1, 0, 1← 0, 0, 0	Ground					25 291.8	.1
C ¹² H ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	3, 0, 3← 2, 0, 2	Ground					25 292.55	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Rb ⁸⁵ I ¹²⁷	1-	13←12	Excited					25 292.65	0.10
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	9, 0, 9← 8, 0, 8	Ground					25 293.3	.3
C ¹² H ₃ O ¹⁶ H	3- 211	8, 2, ← 8, 1,	Ground					25 294.41	.1
C ¹² H ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	3, 0, 3← 2, 0, 2	Ground					25 294.58	
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 0, 4← 3, 0, 3	Ground					25 295.40	
Rb ⁸⁵ Br ⁷⁹	1-	9← 8	Excited					25 296.52	0.10
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	9, 2, 7← 9, 1, 8	Ground					25 297.0	.3
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	3, 1, 2← 2, 1, 1	Ground					25 297.2	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	8, 3, 5← 8, 2, 6	Ground					25 299.99	.2
O ₃ ¹⁶	4-1841	45, 7.39←46, 6.40	Ground					25 300.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 300.3	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	8, 3, 5← 8, 2, 6	Ground					25 301.05	.2
S ³² C ¹² Te ¹²⁴	4- 573	8← 7	Excited					25 302.268	.010
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	3, 0, 3← 2, 0, 2	Ground					25 302.51	
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	6, 1, 5← 6, 1, 6	Ground					25 303.5	.1
C ¹² *HO ¹⁶ C ¹² HC ¹² H ₂ C ¹² H ₂ C ¹² *H ₂	4-1251	11, 5, 7←11, 3, 8	Ground					25 304.	5.
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	3, 0, 3← 2, 0, 2	Ground					25 304.74	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 0, 5← 4, 1, 4	Ground					25 304.87	.1
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	5, , ← 4, ,	Excited					25 306.	
P ³¹ Cl ³⁵ Cl ₂ ³⁷	4-1523	5, , ← 4, ,	Ground					25 306.	10.
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground	6		7		25 306.7	.2
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						25 307.03	.01
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	1, 1, 0← 1, 0, 1	Ground					25 307.25	.01
Na ²³ Cl ³⁷	1-	2← 1	Excited					25 307.5	0.75
As ⁷⁵ Cl ₂ ³⁵ Cl ³⁷	4- 12	6, , ← 5, ,	Ground					25 308.	10.
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² D	3-1072	5, ← 4,	Ground					25 310.9	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 312.	5.
Rb ⁸⁷ Br ⁷⁹	1-	9← 8	Ground					25 312.99	0.10
Cs ¹³³ I ¹²⁷	1-	18←17	Excited					25 313.66	0.10
C ₆ H ₅ F ¹⁹	4-1281	42.13.29←42.13.30	Ground					25 315.0	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	6, 1, 5← 6, 0, 6	Ground					25 316.9	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						25 320.	3.
C ¹³ H ₃ C ¹² H ₂ F ¹⁹	3- 556	3, 0, 3← 2, 1, 2	Ground					25 321.0	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 322.98	.1
N ¹⁵ H ₃	4-1772	8, 8← 8, 8	Ground					25 323.51	.02
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	9, 3, 6← 9, 2, 7	Ground					25 324.9	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						25 327.	3.
NbO ₂ Cl ^b	4-1463	Not Reported						25 327.	
C ₆ H ₅ C ¹² N ¹⁴	4-1291	9, 3, 6← 8, 3, 5	Ground					25 328.	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					25 328.2	1.5
N ¹⁴ H ₂ C ₂ H ₅	3- 631	Not Reported	Ground					25 328.64	.2
DC ¹² :C ¹² C ¹² N ¹⁴	4- 886	3← 2	Ground					25 329.62	
2,4,6-d ₃ -C ₆ H ₃ F ¹⁹	4-1284	6, 1, 5← 5, 1, 4	Ground					25 330.1	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 332.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	5, 1, 4← 4, 1, 3	Ground					25 333.	
C ¹² H ₃ Si ²⁸ HDF ¹⁹	3- 252	2, 1, 1← 1, 1, 0	Ground					25 336.60	.10
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 0, 3← 2, 0, 2	Ground		7/2		7/2	25 338.08	
4d-C ₆ H ₅ F ¹⁹	4-1283	6, 5, 1← 5, 5, 0	Ground					25 338.6	.1
4d-C ₆ H ₅ F ¹⁹	4-1283	6, 5, 2← 5, 5, 1	Ground					25 338.6	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						25 339.	3.
c-HF ¹⁹ C ¹² :C ¹³ HF ¹⁹	4- 692	1, 1, 1← 0, 0, 0	Ground					25 339.02	.05
S ³² C ¹² Te ¹²³	4- 572	8← 7	Excited					25 341.714	.010
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 347.8	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 349.	5.
DC ¹² :C ¹² C ¹³ HO ¹⁶	4- 919	3, 1, 3← 2, 1, 2	Ground					25 350.41	.02
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	25 351.20	
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	25 351.64	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						25 352.1	.3
S ³² C ¹² Te ¹²³	4- 572	8← 7	Excited					25 352.555	.010
As ⁷⁵ Cl ₂ Cl ³⁷	4- 12	Not Reported	Ground					25 354.	10.
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 354.51	.2
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D	3- 506	2, 1, 1← 1, 1, 0	Ground					25 354.60	.2
HC ¹² *:C ¹² HO ¹⁶ C ¹² O ¹⁶ O ¹⁶ *	4- 931	4, 1, 4← 3, 1, 3	Ground					25 355.29	.10
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	25 355.97	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	11, 4, 7←11, 3, 8	Ground		25/2		25/2	25 356.28	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	11, 4, 7←11, 3, 8	Ground		19/2		19/2	25 356.28	
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	25 356.38	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	11, 4, 7←11, 3, 8	Ground		21/2		21/2	25 357.04	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	11, 4, 7←11, 3, 8	Ground		23/2		23/2	25 357.04	
C ₆ H ₅ Cl ³⁵	4-1271	9, 8, 2← 8, 8, 1	Ground					25 359.	5.0
C ₆ H ₅ Cl ³⁵	4-1271	9, 8, 1← 8, 8, 0	Ground					25 359.	5.0
C ¹² *H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *D	4-1182	9, 6, 3← 9, 6, 4	Ground					25 360.5	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	9, 3, 6← 8, 3, 5	Ground					25 363.7	.3
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	9, 4, 6← 8, 4, 5	Ground					25 363.7	.3
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	9, 4, 5← 8, 4, 4	Ground					25 363.7	.3
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	9, 3, 7← 8, 3, 6	Ground					25 363.7	.3
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 1, 8← 9, 0, 9	Ground		15/2		15/2	25 364.62	.2
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 0, 3← 2, 0, 2	Ground		5/2		5/2	25 364.68	
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	4, 1, 3← 4, 0, 4	Ground					25 365.	5.
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 1, 8← 9, 0, 9	Ground		21/2		21/2	25 365.55	.2
Cl ³⁵ F ₃ ¹⁹	4-1371	7, 2, 5← 7, 1, 6	Ground		11/2		11/2	25 365.84	.15
Cl ³⁵ F ₃ ¹⁹	4-1371	7, 2, 5← 7, 1, 6	Ground		17/2		17/2	25 368.11	.15
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 1, 8← 9, 0, 9	Ground					25 368.30	.2
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 0, 3← 2, 0, 2	Ground		3/2		3/2	25 369.52	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						25 370.	10.
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	3, 2, 1← 2, 1, 1	Ground					25 370.14	.05
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 1, 8← 9, 0, 9	Ground		17/2		17/2	25 370.91	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 1, 8← 9, 0, 9	Ground		19/2		19/2	25 371.91	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 371.95	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
S ³⁴ *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1166	3, 2, 2← 2, 2, 1	Ground					25 373.4	3.
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 7, 2← 8, 7, 1	Ground					25 375.	5.0
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 7, 3← 8, 7, 2	Ground					25 375.	5.0
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 1, 3← 2, 1, 2	Ground					25 375.6	.1
Cl ³⁵ F ₃ ¹⁹	4-1371	7, 2, 5← 7, 1, 6	Ground	13/2		13/2		25 376.85	.15
Rb ⁸⁵ I ¹²⁷	1-	13←12	Excited					25 377.33	0.10
Tl ²⁰⁵ Br ⁸¹	1-	10← 9	Ground					25 377.53	0.05
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	7, 6, 2← 7, 4, 3	Ground					25 379.1	.1
Cl ³⁵ F ₃ ¹⁹	4-1371	7, 2, 5← 7, 1, 6	Ground	15/2		15/2		25 379.38	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 2, 9←11, 1,10	Ground	19/2		19/2		25 379.89	.15
K ³⁹ I ¹²⁷	1-	7← 6	Excited					25 380.71	0.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 2, 9←11, 1,10	Ground	25/2		25/2		25 380.83	.15
As ⁷⁵ Cl ₂ ³⁵ Cl ³⁷	4- 12	Not Reported	Ground					25 381.	10.
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 382.23	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 2, 9←11, 1,10	Ground	19/2		19/2		25 383.41	.15
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	Not Reported	Ground					25 383.5	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 2, 9←11, 1,10	Ground	25/2		25/2		25 384.32	.15
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 385.	5.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 2, 9←11, 1,10	Ground	21/2		21/2		25 386.35	.15
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 1, 3← 2, 1, 2	Ground					25 386.4	.1
Cs ¹³³ I ¹²⁷	1-	18←17	Excited					25 387.04	0.10
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 2, 9←11, 1,10	Ground	23/2		23/2		25 387.14	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 2, 9←11, 1,10	Ground	21/2		21/2		25 389.77	.15
C ^b H ₃ ^b N ^b C ^b S ^b	3- 426	5, , ← 4, ,						25 390.	
Cs ¹³³ Cl ³⁵	1-	6← 5	Excited					25 390.36	.40
C ¹³ H ₃ C ¹² :C ¹² Cl ³⁷	4- 978	6, 0← 5, 0	Ground	15/2		13/2		25 390.51	.04
C ¹³ H ₃ C ¹² :C ¹² Cl ³⁷	4- 978	6, 0← 5, 0	Ground	13/2		11/2		25 390.51	.04
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 2, 9←11, 1,10	Ground	23/2		23/2		25 390.60	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 1, 9← 8, 1, 8	Ground					25 390.67	.05
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 2← 4, 2, 3	Ground	5/2	4	5/2	4	25 391.24	.1
S ³² O ₂ ¹⁶	4-1831	8, 1, 7← 7, 2, 6	Ground					25 392.797	.014
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	4, 1, 4← 3, 1, 3	Ground					25 392.84	.2
S ³² C ¹² Te ¹²²	4- 571	8← 7	Excited					25 392.929	.010
As ⁷⁵ Cl ₂ ³⁵ Cl ³⁷	4- 12	Not Reported	Ground					25 393.	10.
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	8, 8, 1← 8, 6, 2	Ground					25 393.3	.5
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 2← 4, 2, 3	Ground	11/2	7	11/2	7	25 393.35	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	11/2	9/2	11/2	9/2	25 393.517	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	11/2	13/2	11/2	13/2	25 393.517	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	11/2	11/2	11/2	11/2	25 393.776	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 394.28	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	9, 8, 2← 9, 6, 3	Ground					25 394.7	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 6, 4← 8, 6, 3	Ground					25 395.	5.0
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 6, 3← 8, 6, 2	Ground					25 395.	5.0
Rb ⁸⁵ Br ⁷⁹	1-	9← 8	Excited					25 396.14	0.10
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 2← 4, 2, 3	Ground	5/2	3	5/2	3	25 396.48	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁹ H ₃ Br ⁷⁹	4- 113	3, ← 2,	Ground					25 397.80	.08
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 2← 4, 2, 3	Ground	11/2	5	11/2	5	25 397.98	.1
DC ¹² :C ¹³ C ¹² HO ¹⁶	4- 918	3, 1, 3← 2, 1, 2	Ground					25 400.78	.02
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					25 401.99	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 402.	5.
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 2← 4, 2, 3	Ground	9/2	6	9/2	6	25 402.67	.1
Cl ₂ O ¹⁶	4-1484	24, 3,21←25, 2,24	Ground					25 402.94	
C ₆ H ₅ F ¹⁹	4-1281	Not Reported						25 403.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground					25 403.65	.05
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 403.68	.2
S ³² C ¹² Te ¹²²	4- 571	8← 7	Excited					25 403.788	.010
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 403.82	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 2← 4, 2, 3	Ground	7/2	4	7/2	4	25 403.90	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 2← 4, 2, 3	Ground	9/2	3	9/2	3	25 403.90	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 2, 6← 8, 1, 7	Ground					25 406.25	.03
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	4, 3, 2← 4, 2, 3	Ground	9/2	5	9/2	5	25 407.53	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 408.60	.2
C ^b H ₃ N ^b C ^b S ^b	3- 426	5, , ← 4, ,						25 409.	
As ⁷⁵ Cl ₂ ³⁵ Cl ³⁷	4- 12	Not Reported	Ground					25 411.	10.
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	9, 3, 6← 9, 2, 7	Ground	19/2		19/2		25 411.05	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 412.	5.
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 413.40	.2
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 504	2, 1, 1← 1, 1, 0	Ground					25 413.66	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -E	3- 512	2, 1, 1← 1, 1, 0	Ground					25 414.42	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	9, 3, 6← 9, 2, 7	Ground	19/2		19/2		25 414.85	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	9, 3, 6← 9, 2, 7	Ground	15/2		15/2		25 414.85	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	9, 3, 6← 9, 2, 7	Ground	17/2		17/2		25 414.85	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	9, 3, 6← 9, 2, 7	Ground	21/2		21/2		25 414.85	.2
4d-C ₆ H ₅ F ¹⁹	4-1283	6, 3, 4← 5, 3, 3	Ground					25 416.4	.1
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	2, 1, 1← 1, 1, 0	Ground					25 416.57	.2
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -A	3- 511	2, 1, 1← 1, 1, 0	Ground					25 417.99	.2
D ₂ N ¹⁵ C ¹² HO ¹⁶	3- 161	6, 1, 5← 5, 2, 4	Ground					25 418.95	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 420.	
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	9, 5, 4← 9, 4, 5	Ground					25 422.18	
Si ²⁸ D ₃ N ¹⁴ C ¹² S ³²	4- 492	9, ← 8,	Ground					25 423.26	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground					25 424.78	.05
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	5, 2, 3← 5, 2, 4	Ground					25 426.89	.2
C ₆ H ₅ Cl ³⁵	4-1271	9, 5, 5← 8, 5, 4	Ground					25 427.	5.0
C ₆ H ₅ Cl ³⁵	4-1271	9, 5, 4← 8, 5, 3	Ground					25 427.	5.0
C ₆ H ₅ F ¹⁹	4-1281	6, 2, 5← 5, 2, 4	Ground					25 427.3	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	11, 8, 3←11, 7, 4	Ground					25 427.9	
4d-C ₆ H ₅ F ¹⁹	4-1283	6, 4, 3←5, 4, 2	Ground					25 429.9	.1
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	4, 3, 1←5, 2, 4	Ground					25 432.2	.1
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	2, 2, 0←3, 1, 3	Ground					25 434.3	.1
C ¹² *DN ¹⁴ C ¹² DC ¹² H:C ¹² DN ¹⁴ *	4-1142	3, 2, 2←2, 1, 1	Ground					25 434.7	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 1, 5←7, 1, 6	Ground					25 436.20	.1
C ¹² D ₂ HC ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 897	10, , ←9, ,	Ground					25 436.8	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *D	4-1155	6, 5, 2←6, 3, 3	Ground					25 436.8	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 437.8	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	9, 3, 6←9, 2, 7	Ground	15/2		15/2		25 441.05	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	9, 3, 6←9, 2, 7	Ground	17/2		17/2		25 441.05	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	9, 3, 6←9, 2, 7	Ground	21/2		21/2		25 441.05	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 0, 4←3, 1, 3	Ground	7/2		5/2		25 441.10	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 0, 4←3, 1, 3	Ground	9/2		7/2		25 441.10	
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	5, , ←4, ,	Excited					25 442.	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 0, 4←3, 1, 3	Ground	5/2		3/2		25 443.15	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 0, 4←3, 1, 3	Ground	11/2		9/2		25 443.15	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 1, 4←3, 1, 3	Ground	11/2		9/2		25 444.2	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	10, 3, 7←10, 2, 8	Ground					25 448.26	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						25 448.9	.3
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 1, 4←3, 1, 3	Ground	9/2		7/2		25 450.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3←5, 1, 4	Ground					25 451.	.05
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	10, 3, 7←10, 2, 8	Ground					25 452.03	.2
C ¹² DHC ₂ ³⁵	4- 344	4, 1, 3←4, 0, 4	Ground					25 453.	5.
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	8, 8, 1←8, 7, 2	Ground					25 454.5	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	37,12,25←37,12,26	Ground					25 460.	5.
Cs ¹³³ I ¹²⁷	1-	18←17	Ground					25 460.53	0.10
4d-C ₆ H ₅ F ¹⁹	4-1283	6, 4, 2←5, 4, 1	Ground					25 461.1	.1
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	10, 9, 2←10, 8, 3	Ground					25 461.6	.1
Rb ⁸⁵ I ¹²⁷	1-	13←12	Excited					25 462.28	0.10
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	46,15,31←46,15,32	Ground					25 464.	5.
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	9, 3, 6←9, 2, 7	Ground	19/2		19/2		25 466.03	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	9, 3, 6←9, 2, 7	Ground	15/2		15/2		25 466.03	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	9, 3, 6←9, 2, 7	Ground	21/2		21/2		25 466.03	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	9, 3, 6←9, 2, 7	Ground	17/2		17/2		25 466.03	.2
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	4, 3, 2←4, 2, 3	Ground					25 466.8	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 467.	5.
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	8, 3, 6←8, 3, 5	Ground					25 470.2	.1
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	9, 3, 6←9, 2, 7	Ground	17/2		17/2		25 470.35	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	9, 3, 6←9, 2, 7	Ground	19/2		19/2		25 470.35	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	9, 3, 6←9, 2, 7	Ground	15/2		15/2		25 470.35	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	9, 3, 6←9, 2, 7	Ground	21/2		21/2		25 470.35	.2
C ₆ H ₅ Cl ³⁵	4-1271	9, 2, 8←8, 2, 7	Ground	17/2		15/2		25 472.2	.1
C ₆ H ₅ Cl ³⁵	4-1271	9, 2, 8←8, 2, 7	Ground	19/2		17/2		25 472.2	.1
C ₆ H ₅ Cl ³⁵	4-1271	9, 2, 8←8, 2, 7	Ground	21/2		19/2		25 472.7	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₅ Cl ³⁵	4-1271	9, 2, 8← 8, 2, 7	Ground		15/2	13/2		25 472.7	.1
Na ²³ Cl ³⁵	1-	2← 1	Excited					25 473.9	0.75
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 475.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 7, ←10, 6,	Ground					25 479.05	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 7, ←10, 6,	Ground					25 480.04	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 4, 6← 8, 4, 5	Ground					25 483.6	
C ¹² H ₅ Cl ³⁵	4-1271	9, 3, 7← 8, 3, 6	Ground					25 483.6	
C ¹² H ₅ Cl ³⁵	4-1271	9, 4, 6← 8, 4, 5	Ground					25 485.9	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 487.	5.
C ¹² H ₅ O ¹⁶ H	3-1051	9, 4, 6← 9, 3, 7	Ground					25 489.4	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	6, 1, 5← 6, 0, 6	Ground					25 492.18	.03
K ³⁹ I ¹²⁷	1-	7← 6	Ground					25 492.81	0.15
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						25 492.96	.1
Na ²³ Cl ³⁷	1-	2← 1	Ground					25 493.9	0.75
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	15, 2, 14←14, 3, 11	Ground					25 494.60	.1
Rb ⁸⁵ Br ⁷⁹	1-	9← 8	Excited					25 495.98	0.10
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	3, 1, 3← 2, 1, 2	Ground					25 496.13	.02
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	9, 2, 7← 9, 1, 8	Ground					25 497.8	1.
C ¹² H ₅ Cl ³⁵	4-1271	9, 4, 5← 8, 4, 4	Ground					25 502.0	
C ¹² H ₅ Cl ³⁵	4-1271	9, 4, 5← 8, 4, 4	Ground					25 504.2	
Cs ¹³³ Br ⁸¹	1-	12←11	Ground					25 504.69	0.10
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	Not Reported						25 506.	3.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					25 507.61	.1
O ₃ ¹⁶	4-1841	38, 6, 32←39, 5, 35	Ground					25 511.	
Cs ¹³³ Cl ³⁵	1-	6← 5	Excited					25 511.25	.20
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						25 516.3	.3
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	7, 1, 6← 6, 2, 5	Ground					25 518.46	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground					25 518.7	
s-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 397	10, 6, 4←10, 6, 5	Ground					25 519.13	.2
O ¹⁶ F ₂ ¹⁹	4-1611	12, 2, 10←11, 3, 9	Ground					25 527.21	.10
(C ¹² D ₃) ₃ C ¹² Cl ³⁵	3- 976	5, ← , 4	Ground					25 528.0	3.
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	6, 2, 5← 6, 2, 4	Ground					25 528.1	.1
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	3, 2, 2← 2, 2, 1	Ground					25 529.2	3.
C ¹² H ₂ Cl ₂ ³⁵	4- 341	8, 0, 8← 7, 1, 7	Ground					25 533.	5.
S ³⁴ F ₃ Cl ³⁵	4-1423	7, ← 6,	Ground					25 533.97	.5
C ¹² H ₃ O ¹⁶ H	3- 211	9, 2, ← 9, 1,	Ground					25 541.43	.1
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1151	12, 11, 2←12, 9, 3	Ground					25 541.64	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	11/2	11/2	11/2	11/2	25 542.856	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	11/2	13/2	11/2	13/2	25 542.856	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	11/2	9/2	11/2	9/2	25 542.856	
S ³² F ₃ Cl ³⁵	4-1421	7, ← 6,	Ground					25 543.85	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² HCl ³⁵ F ₂ ¹⁹	4-251	6, 3, 4← 6, 2, 4	Ground	15/2		15/2		25 547.5	.05
Rb ⁸⁵ I ¹²⁷	1-	13←12	Ground					25 547.52	0.10
C ¹² *H ₂ C ¹² D:C ¹² *D	4-1033	2, 1, 1← 2, 1, 2	Ground					25 549.3	
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3-421	5, , ← 4, ,						25 550.	
C ¹² *H ₂ S ^b C ¹² *H ₂	4-854	Not Reported						25 550.0	20.
Cs ¹³³ Br ⁷⁹	1-	12←11	Excited					25 550.22	0.20
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4-863	Not Reported						25 550.8	.5
C ¹² HDHC ¹² HDF ¹⁹	3-559	6, 1, 5← 6, 1, 6	Ground					25 551.1	.1
P ³¹ Cl ₂ ³⁵ Cl ³⁷	4-1522	5, 4, 1← 4, 3, 1	Ground					25 552.	1.
D ₂ C ¹² :C ¹² O ¹⁶	4-712	9, 1, 8← 9, 1, 9	Ground					25 558.93	
D ₂ O ₂ ¹⁶	3-42	Not Reported						25 560.	3.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3-761	38,19, ←37,20,	Ground					25 560.73	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3-761	38,19, ←37,20,	Ground					25 561.43	.1
C ¹² H ₃ S ³² H	3-221	Not Reported	Ground					25 562.0	.1
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4-641	2, 1, 2← 1, 0, 1	Ground	5/2		3/2		25 563.1	
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3-394	9, 6, 3← 9, 6, 4	Ground					25 563.55	.2
c-C ¹² HF ¹⁹ :C ¹² HCl ³⁵	4-641	2, 1, 2← 1, 0, 1	Ground	7/2		5/2		25 565.7	
I ¹²⁷ C ¹² N ¹⁴	4-511	4← 3	Excited	11/2	9/2	11/2	9/2	25 567.571	
I ¹²⁷ C ¹² N ¹⁴	4-511	4← 3	Excited	11/2	11/2	11/2	11/2	25 567.571	
I ¹²⁷ C ¹² N ¹⁴	4-511	4← 3	Excited	11/2	13/2	11/2	13/2	25 567.571	
O ¹⁶ F ₂ ¹⁹	4-1611	38, 9,30←39, 8,31	Ground					25 569.29	.10
C ¹² D ₃ N ¹⁴ H ₂	3-263	3, , ← 2, ,						25 570.4	.5
H ₂ C ¹² :C ¹² Cl ₂ ³⁵ Cl ³⁷	4-662	9, 4, 5← 9, 3, 6	Ground					25 573.4	1.
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3-365	7, 2, 5← 7, 1, 6	Ground					25 573.58	.2
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	8, 7, 2← 8, 6, 3	Ground					25 575.1	
s-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3-397	2, 0, 2← 1, 0, 1	Ground					25 576.50	.2
C ¹³ H ₃ Cl ³⁵	4-426	1, ← 0,	Ground					25 577.40	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4-41	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		25 581.2	
C ¹² H ₁₃ Cl ³⁷	4-1342	12, ←11,	Ground					25 582.7	
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	8, 8, 1← 8, 7, 2	Ground					25 584.7	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3-363	11, 4, 7←11, 3, 8	Ground	23/2		23/2		25 585.28	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3-363	11, 4, 7←11, 3, 8	Ground	21/2		21/2		25 585.28	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3-363	11, 4, 7←11, 3, 8	Ground	25/2		25/2		25 585.28	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3-363	11, 4, 7←11, 3, 8	Ground	19/2		19/2		25 585.28	
C ¹² *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1152	11, 8, 3←11, 8, 4	Ground					25 586.5	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4-41	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		25 587.5	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	43,14,29←43,14,30	Ground					25 589.	5.
C ¹² H ₃ Ge ^b Cl ₃ ³⁵	3-107	8, ← 7,						25 590.	15.
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3-642	5, 2, 3← 5, 1, 4	Ground					25 590.10	
C ¹² H ₃ C ¹² D ₃ Si ²⁸ H ₂	3-642	5, 2, 3← 5, 1, 4	Ground					25 592.00	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1241	40,13,27←40,13,28	Ground					25 594.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4-922	Not Reported						25 595.	5.
Rb ⁸⁵ Br ⁷⁹	1-	9← 8	Ground					25 596.03	0.10
C ¹³ H ₃ Cl ³⁵	4-426	1, ← 0,	Ground					25 596.19	.1
C ¹² H ₅ F ¹⁹	4-1281	18, 5,13←18, 5,14	Ground					25 596.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F 1 1 1 1				Frequency MHz	Acc. ±MHz
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					25 598.7	
C ₆ H ₅ O ¹⁶ H	3-1051	9, 4, 6← 9, 3, 7	Ground					25 601.4	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	4, 1, 3← 3, 1, 2	Ground					25 601.63	.2
DC ¹³ :C ¹² C ¹² HO ¹⁶	4- 917	3, 1, 2← 2, 1, 1	Ground					25 602.50	.02
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 2, 6← 8, 1, 7	Ground					25 605.61	.03
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 3← 3, 3	Ground	11/2		9/2		25 605.80	.1
C ¹³ H ₃ Cl ³⁵	4- 426	1, ← 0,	Ground					25 611.09	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 3← 3, 3	Ground	9/2		7/2		25 614.02	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 619.50	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						25 619.82	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	14, 6, 9←13, 7, 6	Ground					25 622.24	.1
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	3, 1, 3← 2, 0, 2	Ground					25 623.0	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	14, 6, 8←13, 7, 7	Ground					25 623.46	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	14, 6, 9←13, 7, 6	Ground					25 623.66	.1
C ₆ H ₅ C ¹² N ¹⁴	4-1291	10, 0,10← 9, 0, 9	Ground					25 625.	
Si ²⁹ H ₂ F ₂ ¹⁹	4-1602	4, 1, 3← 4, 0, 4	Ground					25 625.45	.10
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	5, 3, 3← 5, 2, 3	Ground	13/2		13/2		25 625.6	.05
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	9, 6, 3← 9, 6, 4	Ground					25 626.39	.2
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						25 627.	10.
C ₆ H ₅ C ¹² N ¹⁴	4-1291	9, 1, 8← 8, 1, 7	Ground					25 628.	
C ¹² *H:C ¹² HO ¹⁶ C ¹² D:C ¹² *H	4-1154	9, 9, 0← 9, 8, 1	Ground					25 628.6	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						25 628.67	.1
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	5, 3, 3← 5, 2, 3	Ground					25 629.03	.46
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 1, 1← 1, 1, 0	Ground					25 630.50	.10
Cs ¹³³ Cl ³⁵	1-	6← 5	Excited					25 631.58	.20
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	5, 3, 3← 5, 2, 3	Ground	9/2		9/2		25 632.7	.05
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	5, 3, 3← 5, 2, 3	Ground	11/2		11/2		25 635.3	.05
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					25 635.5	.1
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	3, 2, 2← 2, 2, 1	Ground					25 636.3	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					25 637.07	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 2, 9←11, 1,10	Ground	19/2		19/2		25 637.62	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 2, 9←11, 1,10	Ground	25/2		25/2		25 638.65	.15
N ^b O ₂ Cl ^b	4-1463	Not Reported						25 640.	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	14,10, 4←14,10, 5	Ground					25 640.1	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 2, 9←11, 1,10	Ground	19/2		19/2		25 641.10	.15
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground	7/2		5/2		25 641.14	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 2, 9←11, 1,10	Ground	25/2		25/2		25 642.22	.15
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	4, 1, 4← 3, 1, 3	Ground					25 644.76	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 2, 9←11, 1,10	Ground	21/2		21/2		25 645.62	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 2, 9←11, 1,10	Ground	23/2		23/2		25 646.50	.15
4d-C ₆ H ₅ F ¹⁹	4-1283	7, 1, 7← 6, 1, 6	Ground					25 647.9	.1
Cs ¹³³ Br ⁷⁹	1-	12←11	Excited					25 648.95	0.20
O ₃ ¹⁶	4-1841	16, 2,14←17, 1,17	Ground					25 649.	
P ³¹ Cl ₂ Cl ³⁷	4-1522	5, 3, 2← 4, 2, 2	Ground					25 649.	10.
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					25 649.2	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 2, 9←11, 1,10	Ground	21/2	21/2			25 649.20	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 2, 9←11, 1,10	Ground	23/2	23/2			25 650.34	.15
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground	5/2	3/2			25 650.43	.05
C ¹² H ₃ C ¹³ O ¹⁶ F ¹⁹	3- 399	2, 1, 2← 1, 1, 1	Ground					25 650.62	.2
O ^b O ^b O ^b	4-1847	Not Reported						25 651.	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	2, 1, 2← 1, 1, 1	Ground					25 651.87	.2
C ¹² H ₃ N ¹⁴ C ¹² S ³²	3- 421	5, 1, 4← 4, 1, 3						25 653.	
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	5, 3, 2← 5, 2, 3	Ground					25 655.5	.2
C ¹² H ₂ :C ¹² F ¹⁹ Cl ³⁵	4- 631	7, 2, 5← 7, 1, 6	Ground					25 656.30	
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	7, 1, 6← 7, 0, 7	Ground					25 656.94	
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground	9/2	7/2			25 657.34	.05
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	5, 3, 2← 5, 2, 3	Ground					25 657.85	.2
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground	9/2	9/2			25 657.89	.05
N ^b O ³ Cl ^b	4-1463	Not Reported						25 658.	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					25 658.53	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 659.	5.
C ¹² H ₃ S ³² H	3- 221	9, 2, 8←10, 1, 9	Ground					25 659.7	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 4← 3, 0, 3	Ground	9/2	7/2			25 662.47	.15
Na ²³ Cl ³⁵	1-	2← 1	Excited					25 666.5	0.75
C ¹² H ₂ F ₂ ¹⁹	4- 351	27, 8,20←28, 7,21	Ground					25 669.29	.10
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 2← 3, 2	Ground	9/2	7/2			25 670.18	.1
As ⁷⁵ Cl ₃ ³⁵	4- 11	6, ← 5,	Excited					25 675.	10.
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 1, 3← 4, 0, 4	Ground					25 676.20	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 2← 3, 2	Ground	11/2	9/2			25 679.38	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						25 680.	3.
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	11, 6, 5←11, 6, 6	Ground					25 680.09	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 4← 3, 0, 3	Ground	7/2	5/2			25 680.83	.15
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	6, 1, 5← 6, 0, 6	Ground					25 682.88	.03
t-C ¹² *H ₂ C ¹² DHC ¹² *HC ¹² N ¹⁴	4-1173	4, 1, 4← 3, 1, 3	Ground					25 683.31	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 684.	5.
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	11, 6, 5←11, 6, 6	Ground					25 684.02	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 4← 3, 0, 3	Ground	11/2	9/2			25 684.46	.15
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	7, 4← 6, 4	Ground					25 684.57	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground					25 684.77	
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 0← 3, 0	Ground	7/2	5/2			25 685.10	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground	11/2	9/2			25 685.91	.05
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	7, 3← 6, 3	Ground					25 686.05	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	7, 2← 6, 2	Ground					25 687.03	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	7, 1← 6, 1	Ground					25 687.66	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	7, 0← 6, 0	Ground					25 687.84	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground	3/2	1/2			25 688.71	.05
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 1← 3, 1	Ground	7/2	5/2			25 689.74	.1
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	6, 3, 4← 6, 2, 5	Ground					25 692.5	1.
C ¹² H ₂ F ₂ ¹⁹	4- 351	27, 8,19←28, 7,22	Ground					25 694.13	.10
N ¹⁴ H ₃	4-1771	12,11←12,11	Ground					25 695.23	.02

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 2, 1← 3, 1, 2	Ground					25 698.47	.10
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	7, 0, 7← 6, 1, 6	Ground					25 699.42	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 701.	5.
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 1← 3, 1	Ground		9/2		7/2	25 702.85	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	4, 1, 4← 3, 0, 3	Ground		5/2		3/2	25 703.40	.15
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 2← 3, 2	Ground		7/2		5/2	25 704.16	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						25 707.52	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						25 708.51	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground		13/2		11/2	25 709.28	.05
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	5/2		3/2		25 711.50	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 0← 3, 0	Ground		9/2		7/2	25 713.59	.1
N ¹⁴ H ₃	4-1771	7, 7← 7, 7	Ground					25 715.17	.02
P ³¹ Cl ₂ ³⁵ Cl ³⁷	4-1522	5, 2, 3← 4, 1, 3	Ground					25 716.	10.
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	2, 0, 2← 1, 0, 1	Ground					25 719.08	.2
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	7, 2, 5← 6, 3, 4	Ground					25 719.8	.3
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	2, 0, 2← 1, 0, 1	Ground					25 720.39	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 722.	5.
As ⁷⁵ C ₃ ³⁵	4- 11	6, ← 5,	Excited					25 724.	10.
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						25 724.83	
P ³¹ Cl ₂ ³⁵ Cl ³⁷	4-1522	5, 3, 3← 4, 2, 3	Ground					25 725.	10.
P ³¹ Cl ₂ ³⁵ Cl ³⁷	4-1522	5, 1, 4← 4, 0, 4	Ground					25 725.	10.
P ³¹ Cl ₂ ³⁵ Cl ³⁷	4-1522	5, 2, 4← 4, 1, 4	Ground					25 725.	10.
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	5, 3, 2← 5, 3, 3	Ground					25 725.2	.3
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 1← 3, 1	Ground		11/2		9/2	25 725.23	.1
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	1, 1, 1← 0, 0, 0	Ground					25 725.58	.05
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	7/2		5/2		25 728.77	.1
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 2← 2, 2, 1	Excited					25 730.	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						25 731.4	.5
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	8, 7, 2← 8, 6, 2	Ground					25 732.7	.5
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 0← 3, 0	Ground		13/2		11/2	25 733.43	.1
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					25 734.8	1.
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					25 736.1	1.5
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					25 740.9	1.5
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 0← 3, 0	Ground		11/2		9/2	25 740.94	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H ⁻	3- 491	2, 1, 2← 1, 0, 1	Excited					25 742.	3.
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						25 742.0	.3
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 1← 3, 1	Ground		13/2		11/2	25 742.37	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	8, 2, 6← 8, 1, 7	Excited					25 743.60	.03
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3, 16←17, 4, 13	Ground		39/2		37/2	25 745.7	
P ³¹ Cl ₂ ³⁵ Cl ³⁷	4-1522	5, 4, 2← 4, 3, 2	Ground					25 748.	10.
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	13/2		11/2		25 748.18	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	6, 1, 5← 6, 1, 6	Ground					25 748.55	.3
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 2← 2, 2, 1	Excited					25 750.	
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3, 16←17, 4, 13	Ground		37/2		35/2	25 751.1	
Cs ¹³³ Cl ³⁵	1-	6← 5	Excited					25 752.16	.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	3/2	1/2			25 752.65	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground	7/2	7/2			25 752.80	.05
Si ²⁸ H ₃ Br ⁸¹	4- 112	3, ← 2,	Ground					25 755.89	.08
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 4← 3, 0, 3	Ground	9/2	7/2			25 756.54	.15
C ₆ H ₅ F ¹⁹	4-1281	Not Reported						25 758.	5.
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 2← 3, 2	Ground	5/2	3/2			25 758.20	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3,16←17, 4,13	Ground	35/2	33/2			25 758.5	
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	2, 0, 2← 1, 0, 1	Ground					25 760.73	.2
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	4, 1, 3← 4, 0, 4	Ground					25 761.92	.10
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	11/2	9/2			25 763.23	.1
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -E	3- 516	2, 1, 1← 1, 1, 0	Ground					25 764.42	.35
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	2, 0, 2← 1, 0, 1	Ground					25 764.98	.2
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	10, 7, 3←10, 6, 4	Ground					25 765.1	
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					25 766.9	1.
As ⁷⁵ Cl ₃ ³⁵	4- 11	6, ← 5,	Ground					25 767.	2.
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -A	3- 515	2, 1, 1← 1, 1, 0	Ground					25 767.30	.35
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3,16←17, 4,13	Ground	33/2	31/2			25 767.4	
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 2← 3, 2	Ground	13/2	11/2			25 768.92	.1
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	10, 4, 7←10, 4, 6	Ground					25 769.8	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 1, 1← 1, 1, 0	Ground					25 771.30	.10
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						25 771.34	.1
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	6, 1, 5← 6, 0, 6	Ground					25 771.55	.05
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	6, 3, 4← 6, 2, 5	Ground					25 771.6	.5
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	6, 1, 5← 6, 0, 6	Ground					25 773.65	.05
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	6, 3, 3← 6, 2, 4	Ground					25 774.16	.2
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	6, 3, 3← 6, 2, 4	Ground					25 775.01	.2
S ³⁴ P ³¹ F ₃ ¹⁹	4-1693	5, ← 4,	Excited					25 775.3	.5
(C ¹² H ₃) ₂ Si ²⁸ H ₂	3- 641	6, 1, 5← 6, 0, 6	Ground					25 775.75	.05
C ¹² H ₃ Si ³⁰ H ₂ F ¹⁹	3- 243	2, 1, 1← 1, 1, 0	Ground					25 776.55	.10
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 4← 3, 0, 3	Ground	7/2	5/2			25 778.50	.15
DC ¹² :C ¹² C ¹³ HO ¹⁶	4- 919	3, 0, 3← 2, 0, 2	Ground					25 781.36	.02
H ₂ C ¹² :C ¹² Cl ₂ ^b	4- 663	Not Reported	Ground					25 783.1	1.5
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 4← 3, 0, 3	Ground	11/2	9/2			25 783.12	.15
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	9/2	7/2			25 783.50	.1
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	11, 3, 8←11, 2, 9	Ground					25 785.7	.5
C ¹² H ₃ O ¹⁶ H	3- 211	26, 2, ←26, 1,	Ground					25 787.12	.1
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3← 3, 1, 2	Ground	5/2	5/2			25 788.26	.05
DC ¹² :C ¹² C ¹³ HO ¹⁶	4- 919	3, 2, 2← 2, 2, 1	Ground					25 788.78	.02
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	9/2	9/2			25 789.85	.1
C ¹² H ₃ Si ²⁹ H ₂ F ¹⁹	3- 242	2, 1, 1← 1, 1, 0	Ground					25 791.38	.10
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	9, 1, 9← 8, 2, 6	Ground					25 791.65	.1
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	9, 3, 6← 9, 2, 7	Ground	19/2	19/2			25 791.85	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	9, 3, 6← 9, 2, 7	Ground	21/2	21/2			25 791.85	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	9, 3, 6← 9, 2, 7	Ground	15/2	15/2			25 791.85	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	9, 3, 6← 9, 2, 7	Ground	17/2	17/2			25 791.85	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
DC ¹² :C ¹² C ¹³ HO ¹⁶	4- 919	3, 2, 1 $\leftarrow$ 2, 2, 0	Ground					25 792.59	.02
H ₂ C ¹² :C ¹² HI ¹²⁷	4- 801	4, 1, 3 $\leftarrow$ 3, 1, 2	Ground		3/2		3/2	25 793.83	.05
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 796.	5.
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	9, 1, 9 $\leftarrow$ 8, 2, 6	Ground					25 796.15	.1
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	9, 3, 6 $\leftarrow$ 9, 2, 7	Ground		15/2		15/2	25 796.17	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	9, 3, 6 $\leftarrow$ 9, 2, 7	Ground		19/2		19/2	25 796.17	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	9, 3, 6 $\leftarrow$ 9, 2, 7	Ground		21/2		21/2	25 796.17	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	9, 3, 6 $\leftarrow$ 9, 2, 7	Ground		17/2		17/2	25 796.17	.2
O ¹⁶ F ₂ ¹⁹	4-1611	38, 9,29 $\leftarrow$ 39, 8,32	Ground					25 796.85	.10
S ³⁴ P ³¹ F ₃ ¹⁹	4-1693	5, $\leftarrow$ 4,	Ground					25 797.87	.03
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3 $\leftarrow$ 5, 1, 4	Ground		5		6	25 798.5	.2
I ¹²⁷ C ¹² N ¹⁴	4- 511	4 $\leftarrow$ 3	Excited	7/2		5/2		25 802.92	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	4, 1, 4 $\leftarrow$ 3, 0, 3	Ground		5/2		3/2	25 805.56	.15
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground					25 806.77	.10
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	4, 2, 3 $\leftarrow$ 4, 1, 4	Ground					25 807.92	.03
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					25 810.49	.1
C ₆ H ₅ Cl ³⁵	4-1271	9, 3, 6 $\leftarrow$ 8, 3, 5	Ground					25 810.9	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					25 810.96	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 3 $\leftarrow$ 3, 3	Ground		13/2		11/2	25 812.69	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	4 $\leftarrow$ 3	Excited	5/2		3/2		25 815.34	.1
Cs ¹³³ Br ⁷⁹	1-	12 $\leftarrow$ 11	Excited					25 816.53	0.20
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , $\leftarrow$ 1, ,	Ground					25 817.4	.1
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 0, 9 $\leftarrow$ 8, 0, 8	Ground					25 817.70	.05
S ³⁴ P ³¹ F ₃ ¹⁹	4-1693	5, $\leftarrow$ 4,	Excited					25 818.0	2.
C ¹² C ₃ ³⁷ C ¹² N ¹⁴	4- 584	8, $\leftarrow$ 7,	Ground					25 818.5	1.0
DC ¹² :C ¹³ C ¹² HO ¹⁶	4- 918	3, 0, 3 $\leftarrow$ 2, 0, 2	Ground					25 822.90	.02
I ¹²⁷ C ¹² N ¹⁴	4- 511	4 $\leftarrow$ 3	Ground	13/2		11/2		25 823.08	.1
C ¹² DHDC ¹² HDF ¹⁹	3- 561	4, 3, 1 $\leftarrow$ 5, 2, 4	Ground					25 823.1	.1
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	7, 0, 7 $\leftarrow$ 6, 0, 6	Ground					25 823.5	.1
C ¹² HD ₂ I ¹²⁷	4- 484	2, 1, $\leftarrow$ 1, 0,	Ground		9/2		7/2	25 826.9	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	9, 4, 5 $\leftarrow$ 9, 3, 6	Ground		21/2		21/2	25 827.40	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	9, 4, 5 $\leftarrow$ 9, 3, 6	Ground		15/2		15/2	25 827.40	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3 $\leftarrow$ 5, 1, 4	Ground		4		5	25 828.1	.2
C ¹² ₈ H:C ¹² DO ¹⁶ C ¹² D:C ¹² ₈ H	4-1156	7, 7, 1 $\leftarrow$ 7, 6, 2	Ground					25 828.6	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4 $\leftarrow$ 3	Excited	9/2		7/2		25 829.31	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	9, 4, 5 $\leftarrow$ 9, 3, 6	Ground		19/2		19/2	25 829.70	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	9, 4, 5 $\leftarrow$ 9, 3, 6	Ground		17/2		17/2	25 829.70	
C ¹³ H ₂ F ₂ ¹⁹	4- 352	4, 2, 2 $\leftarrow$ 5, 1, 5	Ground					25 829.9	.4
DC ¹² :C ¹³ C ¹² HO ¹⁶	4- 918	3, 2, 2 $\leftarrow$ 2, 2, 1	Ground					25 830.23	.02
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 833.	5.
DC ¹² :C ¹³ C ¹² HO ¹⁶	4- 918	3, 2, 1 $\leftarrow$ 2, 2, 0	Ground					25 833.92	.02
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						25 834.5	.5
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 2, $\leftarrow$ 2, 2,	Ground					25 835.2	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	4 $\leftarrow$ 3	Ground	11/2		9/2		25 837.64	.1
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	12, , $\leftarrow$ 12, ,	Ground					25 848.0	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	1, 1, 1← 0, 0, 0	Excited					25 848.69	.05
I ²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	9/2		7/2		25 850.78	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground		3		4	25 852.7	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 1, 7← 8, 1, 8	Ground					25 853.9	.1
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 509	2, 1, 1← 1, 1, 0	Ground					25 854.88	.2
Na ²³ Cl ³⁵	1-	2← 1	Excited					25 857.6	0.75
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 508	2, 1, 1← 1, 1, 0	Ground					25 858.48	.2
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	13, 4, 9←13, 3,10	Ground					25 859.5	.5
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	2, 1, 1← 2, 0, 2	Ground					25 860.0	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	9, 3, 6← 9, 2, 7	Ground		19/2		19/2	25 860.85	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	9, 3, 6← 9, 2, 7	Ground		15/2		15/2	25 860.85	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	9, 3, 6← 9, 2, 7	Ground		17/2		17/2	25 860.85	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	9, 3, 6← 9, 2, 7	Ground		21/2		21/2	25 860.85	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					25 861.23	.1
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	13, 4, 9←13, 3,10	Ground					25 861.5	.5
H ₂ C ¹² :C ¹² Cl ₂ ³⁵	4- 661	13, 4, 9←13, 3,10	Ground					25 863.3	.5
HC ¹² N ¹⁴	4- 291	7← 7	Excited					25 863.35	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	4, 3← 3, 3	Ground		5/2		3/2	25 864.27	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	9, 3, 6← 9, 2, 7	Ground		15/2		15/2	25 865.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	9, 3, 6← 9, 2, 7	Ground		19/2		19/2	25 865.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	9, 3, 6← 9, 2, 7	Ground		17/2		17/2	25 865.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	9, 3, 6← 9, 2, 7	Ground		21/2		21/2	25 865.30	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 868.	5.
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	3, 2, 2← 2, 2, 1	Ground					25 869.0	3.
C ¹² O ¹⁸ F ₂ ¹⁹	4- 213	5, 3, 2← 5, 3, 3	Ground					25 869.20	.10
2,4,6-d ₃ -C ¹² H ₅ F ¹⁹	4-1284	6, 3, 3← 5, 3, 2	Ground					25 869.5	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 2, 3← 5, 1, 4	Ground		2		3	25 870.1	.2
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 2, 8← 8, 2, 7	Ground					25 872.05	.05
I ²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	11/2		9/2		25 872.24	.1
Cs ¹³³ Cl ³⁵	1-	6← 5	Ground					25 873.11	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 877.28	
C ¹² H ₃ O ¹⁶ H	3- 211	10, 2, 4←10, 1,	Ground					25 878.18	.1
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						25 878.3	.5
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	18, 2,16←17, 3,15	Ground					25 878.70	.1
C ₈ H ₁₃ Br ⁸¹	4-1332	18, 4←17,	Excited					25 882.	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	6, 1, 5← 6, 0, 6	Ground					25 882.63	.03
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	6, 5, 2← 5, 5, 1	Ground					25 888.4	.1
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	6, 5, 1← 5, 5, 0	Ground					25 888.4	.1
C ¹² *D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *H	4-1183	9, 9, 0← 9, 8, 1	Ground					25 888.6	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 0, 4← 3, 0, 3	Ground		9/2		7/2	25 889.0	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 0, 4← 3, 0, 3	Ground		11/2		9/2	25 889.0	
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	6, 1, 5← 6, 1, 6	Ground					25 889.3	.5
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 4, 5← 8, 4, 4	Ground					25 892.2	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 3, 7← 8, 3, 6	Ground					25 892.2	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 4, 6← 8, 4, 5	Ground					25 892.2	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 3, 6← 8, 3, 5	Ground					25 892.2	.15
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	11/2	9/2			25 893.73	.1
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	11, 5, 6←11, 5, 7	Ground					25 894.3	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 895.4	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 0, 4← 3, 0, 3	Ground		7/2	5/2		25 895.5	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 0, 4← 3, 0, 3	Ground		5/2	3/2		25 895.5	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					25 898.	5.
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	13/2	11/2			25 906.28	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 2, 2← 3, 2, 1	Ground		11/2	9/2		25 906.7	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 2, 3← 3, 2, 2	Ground		7/2	5/2		25 906.7	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	4, 1, 4← 3, 1, 3	Ground					25 907.24	.2
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	7, 1, 6← 7, 1, 7	Ground					25 908.00	.10
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	1, 1, 1← 2, 0, 2	Ground		0	1		25 908.70	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	10, 3, 7←10, 2, 8	Ground					25 909.1	.2
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	1, 1, 1← 2, 0, 2	Ground		2	3		25 910.08	
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	7, 1, 6← 7, 0, 7	Ground					25 911.16	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	1, 1, 1← 2, 0, 2	Ground		2	2		25 911.28	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	1, 1, 1← 2, 0, 2	Ground		1	2		25 911.78	
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	12, 7, 6←12, 7, 5	Ground					25 912.13	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 912.55	
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	2, 0, 2← 1, 0, 1	Ground					25 912.7	.3
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	6, 1, 5← 6, 1, 6	Ground					25 917.11	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					25 917.5	.1
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	12, 7, 6←12, 7, 5	Ground					25 917.58	.2
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					25 918.4	1.
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 2, 3← 3, 2, 2	Ground		9/2	7/2		25 919.0	
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 0, 3← 2, 0, 2	Ground					25 919.8	.1
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	9, 9, 1← 9, 7, 2	Ground					25 920.	10.
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	3, 0, 3← 2, 0, 2	Ground					25 920.83	.02
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 0, 3← 2, 0, 2	Ground					25 921.0	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁸¹	4- 42	4, 2, 2← 3, 2, 1	Ground		7/2	5/2		25 921.8	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 923.90	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 926.1	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 927.	5.
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	13/2	11/2			25 927.66	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	6, 5, 2← 6, 3, 3	Excited					25 928.	
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	3, 2, 2← 2, 2, 1	Ground					25 928.19	.02
C ¹² DHDC ¹² HDF ¹⁹	3- 561	4, 1, 3← 4, 0, 4	Ground					25 928.2	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 0, 5← 4, 0, 4	Ground		11/2	9/2		25 930.24	.15
Si ²⁸ H ₃ Br ⁷⁹	4- 111	3, ← 2,	Ground					25 930.32	.08
Li ⁷ Ti ²⁷	1-	1← 0	Excited		5/2	5/2		25 931.21	0.20
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	3, 2, 1← 2, 2, 0	Ground					25 931.96	.02
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 0, 5← 4, 0, 4	Ground		13/2	11/2		25 932.46	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 2, 7← 8, 2, 6	Ground					25 933.76	.05
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 2, 2← 2, 2, 1	Ground					25 934.9	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 0, 5← 4, 0, 4	Ground	9/2	7/2			25 936.96	.15
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	3, 2, 2← 3, 0, 3	Ground					25 937.9	.3
3d-C ₆ H ₅ F ¹⁹	4-1282	6, 3, 4← 5, 3, 3	Ground					25 938.4	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 0, 5← 4, 0, 4	Ground	7/2	5/2			25 938.87	.15
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Excited	3/2	3/2			25 939.87	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 940.	5.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 942.44	
Si ³⁰ H ₃ Cl ³⁵	4-1442	2, ← 1,	Ground					25 943.2	.1
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 2, 1← 2, 2, 0	Ground					25 946.8	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 947.9	.1
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	2, 2, 0← 1, 0, 1	Ground					25 949.0	.1
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 2, ← 7, 2,	Ground					25 954.3	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	7/2	7/2			25 954.36	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	10, 3, 7←10, 2, 8	Ground					25 954.59	.2
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Excited	5/2	3/2			25 954.60	.05
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	13, 9, 4←13, 9, 5	Ground					25 958.0	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	10, 3, 7←10, 2, 8	Ground					25 958.15	.2
S ³² *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1161	3, 2, 2← 2, 2, 1	Ground					25 961.8	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 962.	5.
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	1/2	1	5/2	2	25 962.1	.3
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	5, 3, 2← 5, 2, 3	Ground	7/2		7/2		25 962.30	.2
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	7/2	5	5/2	4	25 962.5	.3
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					25 962.7	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	5, 3, 2← 5, 2, 3	Ground		13/2		13/2	25 964.05	.2
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	7/2	4	5/2	3	25 964.6	.3
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	3, 2, 2← 2, 2, 1	Ground		5/2		5/2	25 964.60	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 0, 3← 2, 0, 2	Ground		7/2		7/2	25 964.70	
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	3/2	3	1/2	2	25 964.9	.3
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	3/2	3	5/2	3	25 964.9	.3
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	5/2	4	3/2	3	25 964.9	.3
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	5/2	2	3/2	1	25 966.0	.3
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Excited		1/2		3/2	25 966.37	.05
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	5/2	3	3/2	3	25 967.0	.3
C ¹³ H ₃ C ¹² :C ¹² Cl ³⁵	4- 977	6, 0← 5, 0	Ground		11/2		9/2	25 967.36	.04
C ¹³ H ₃ C ¹² :C ¹² Cl ³⁵	4- 977	6, 0← 5, 0	Ground		9/2		7/2	25 967.36	.04
C ¹³ H ₃ C ¹² :C ¹² Cl ³⁵	4- 977	6, 0← 5, 0	Ground		15/2		13/2	25 968.26	.04
C ¹³ H ₃ C ¹² :C ¹² Cl ³⁵	4- 977	6, 0← 5, 0	Ground		13/2		11/2	25 968.26	.04
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 969.	5.
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	5, 3, 2← 5, 2, 3	Ground		9/2		9/2	25 969.00	.2
Tl ²⁰⁵ Cl ³⁷	1-	5← 4	Excited					25 969.04	0.20
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	3/2		3/2		25 969.58	.1
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	2, 2, 1← 1, 1, 0	Ground	5/2	3	3/2	2	25 970.3	.3
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	5, 3, 2← 5, 2, 3	Ground		11/2		11/2	25 970.85	.2
P ³¹ Cl ₂ ³⁵ Cl ³⁷	4-1522	5, 5, 1← 4, 4, 1	Ground					25 971.	1.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					25 971.05	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	9, 1, 8← 9, 0, 9	Ground					25 973.43	
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	8, 1, 7← 8, 0, 8	Ground					25 974.	5.
Li ⁷ T ¹²⁷	1-	1← 0	Excited		7/2		5/2	25 975.62	0.20
HDC ¹² :C ¹² O ¹⁶	4- 713	10, 1, 9←10, 1,10	Ground					25 975.83	
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 2← 2, 2, 1	Ground		3/2		3/2	25 977.92	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited		13/2		11/2	25 979.72	
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	6, 3, 3← 5, 3, 2	Ground					25 980.0	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						25 981.	5.
N ¹⁴ O ₂ Cl ³⁵	4-1461	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	25 981.33	
N ¹⁴ O ₂ Cl ³⁵	4-1461	3, 0, 3← 2, 0, 2	Ground		5/2		3/2	25 981.95	
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 2← 2, 2, 1	Ground		7/2		7/2	25 983.23	
N ¹⁴ O ₂ Cl ³⁵	4-1461	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	25 987.43	
N ¹⁴ O ₂ Cl ³⁵	4-1461	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	25 988.01	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 6, 4← 8, 6, 3	Ground		19/2		17/2	25 988.7	.1
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	2, 2, 0← 1, 0, 1	Ground					25 989.0	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 6, 4← 8, 6, 3	Ground		17/2		15/2	25 989.6	.1
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	6, ← 5,	Ground					25 990.93	.07
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					25 991.1	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	5/2		5/2		25 991.92	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 6, 4← 8, 6, 3	Ground		21/2		19/2	25 993.3	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 6, 4← 8, 6, 3	Ground		15/2		13/2	25 994.2	.1
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	6, ← 5,	Excited					25 995.03	.07
Li ⁷ T ¹²⁷	1-	1← 0	Excited		3/2		5/2	25 995.48	0.40
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 2← 2, 2, 1	Ground		1/2		1/2	25 996.61	
C ¹² H ₃ C ¹² H ₂ C ¹³ N ¹⁴	3- 732	3, 1, 3← 2, 1, 2	Ground					25 996.90	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 1← 1, 1, 0	Ground					25 997.85	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	10, 4, 6←10, 3, 7	Ground					25 998.02	.1
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	6, 4, 3← 5, 4, 2	Ground					25 998.1	.1
N ¹⁴ O ₂ Cl ³⁵	4-1461	3, 0, 3← 2, 0, 2	Ground		5/2		5/2	25 998.57	
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, ← 3,	Ground					26 000.77	
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 3← 3, 3	Ground		7/2		7/2	26 001.20	
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 3← 3, 3	Ground		9/2		7/2	26 003.04	
Ge ⁷⁴ H ₃ Cl ³⁵	4-1432	3, ← 2,	Ground					26 003.46	.5
N ¹⁴ O ₂ Cl ³⁵	4-1461	3, 0, 3← 2, 0, 2	Ground		3/2		3/2	26 004.59	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	10, 3, 7←10, 2, 8	Ground					26 008.42	.2
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 2← 3, 2	Ground		9/2		7/2	26 008.55	
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 3← 3, 3	Ground		7/2		5/2	26 010.09	
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 2← 3, 2	Ground		7/2		5/2	26 010.73	
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					26 011.8	1.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 012.	5.
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	10, 3, 7←10, 2, 8	Ground					26 012.18	.2
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 2← 3, 2	Ground		11/2		9/2	26 014.69	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						26 016.	3.
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	3, 1, 2← 2, 1, 1	Ground					26 016.3	.1
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 2← 3, 2	Ground		5/2		3/2	26 016.84	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F				Frequency MHz	Acc. ±MHz
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 3← 3, 3	Ground	11/2	9/2			26 016.84	
C ¹² H ₃ C ¹³ :C ¹² Cl ³⁷	4- 976	6, 0← 5, 0	Ground	13/2	11/2			26 019.53	.04
C ¹² H ₃ C ¹³ :C ¹² Cl ³⁷	4- 976	6, 0← 5, 0	Ground	15/2	13/2			26 019.53	.04
C ¹² HD ₂ I ¹²⁷	4- 484	2, 0, ← 1, 1,	Ground	9/2	7/2			26 022.2	
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 3← 3, 3	Ground	9/2	9/2			26 022.20	
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 2, ← 2, 2,	Ground					26 023.4	.1
C ¹² F ₃ ¹⁹ Cl ³⁷	4- 162	4, 3← 3, 3	Ground	5/2	3/2			26 023.94	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					26 024.73	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 5, 5← 8, 5, 4	Ground	17/2	15/2			26 026.4	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 5, 5← 8, 5, 4	Ground	19/2	17/2			26 026.4	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 5, 4← 8, 5, 3	Ground	17/2	15/2			26 027.1	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 5, 4← 8, 5, 3	Ground	19/2	17/2			26 027.1	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	4, 0, 4← 3, 0, 3	Ground	11/2	9/2			26 029.3	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	4, 0, 4← 3, 0, 3	Ground	9/2	7/2			26 029.3	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 5, 5← 8, 5, 4	Ground	15/2	13/2			26 029.5	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 5, 5← 8, 5, 4	Ground	21/2	19/2			26 029.5	.1
Tl ²⁰⁵ I ¹²⁷	1-	16←15	Ground					26 029.54	0.30
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 5, 4← 8, 5, 3	Ground	15/2	13/2			26 030.2	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 5, 4← 8, 5, 3	Ground	21/2	19/2			26 030.2	.1
Ge ⁷² HCl ₃ ³⁵	4-1492	6, ← 5,	Ground					26 031.05	.07
C ¹² *H ₂ ^b S ^b C ¹² *H ₂	4- 854	Not Reported						26 035.0	20.
Ge ⁷² HCl ₃ ³⁵	4-1492	6, ← 5,	Excited					26 035.67	.07
HDO ₂ ¹⁶	3- 43	18, , ←18, ,						26 036.	3.
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	4, 0, 4← 3, 0, 3	Ground	5/2	3/2			26 037.3	
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	4, 0, 4← 3, 0, 3	Ground	7/2	5/2			26 037.3	
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	17, 2,15←18, 1,18	Ground					26 040.	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 1, 2← 2, 1, 1	Ground					26 041.92	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	2, 1, 1← 1, 1, 0	Ground					26 044.80	.2
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	13/2	11/2			26 046.32	.1
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	4, 2, 2← 3, 2, 1	Ground	11/2	9/2			26 046.5	
C ¹² *HC ¹³ H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1206	3, 2, 2← 2, 2, 1	Ground					26 047.6	
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	2, 1, 1← 1, 1, 0	Ground					26 048.35	.2
Si ²⁸ H ₃ Cl ³⁷	4-1443	2, ← 1,	Ground					26 049.60	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	24, 2,22←24, 2,23	Ground					26 050.17	
Na ²³ Cl ³⁵	1-	2← 1	Ground					26 051.1	0.75
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					26 054.3	.1
4d-C ¹² H ₅ F ¹⁹	4-1283	6, 1, 5← 5, 1, 4	Ground					26 055.5	.1
3d-C ¹² H ₅ F ¹⁹	4-1282	6, 4, 2← 5, 4, 1	Ground					26 055.9	.1
t-C ¹² *H ₂ C ¹² DHC ¹² *HC ¹² N ¹⁴ *	4-1173	4, 0, 4← 3, 0, 3	Ground					26 058.50	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3,16←17, 4,13	Ground					26 060.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 062.	5.
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	5, 1, 4← 5, 0, 5	Ground					26 063.	5.
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 1, 8← 8, 1, 7	Ground					26 063.	5.0
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	3, 2, 2← 2, 2, 1	Ground					26 063.3	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	4, 1, 4← 3, 1, 3	Ground					26 064.43	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
H ₂ B ¹¹ H ₂ B ¹¹ HBr ⁷⁹	4- 41	4, 2, 2← 3, 2, 1	Ground	7/2 5/2	26 065.	
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	4, 1, 3← 4, 0, 4	Excited		26 067.51	.10
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Excited	3/2 3/2	26 068.83	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		26 069.9	.1
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	16, 6,11←16, 5,11	Ground		26 072.78	.2
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	6, ← 5,	Ground		26 073.24	.07
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	9, 0, 9← 8, 1, 8	Ground		26 074.66	.02
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	7, 0, 7← 6, 1, 6	Ground	11/2 9/2	26 075.08	.05
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	7, 0, 7← 6, 1, 6	Ground	17/2 15/2	26 076.00	.05
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	2, 2, 0← 1, 1, 0	Ground		26 076.68	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		26 077.4	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 3, 7← 8, 3, 6	Ground	19/2 17/2	26 078.0	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 3, 7← 8, 3, 6	Ground	17/2 15/2	26 078.0	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	7, 0, 7← 6, 1, 6	Ground	13/2 11/2	26 078.28	.05
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	2, 2, 0← 1, 1, 0	Ground		26 078.78	
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 3, 7← 8, 3, 6	Ground	21/2 19/2	26 079.2	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 3, 7← 8, 3, 6	Ground	15/2 13/2	26 079.2	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	7, 0, 7← 6, 1, 6	Ground	15/2 13/2	26 079.28	.05
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 1, 3← 2, 1, 2	Ground		26 079.47	
Tl ²⁰⁵ Cl ³⁷	1-	5← 4	Ground		26 079.87	0.10
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	6, ← 5,	Excited		26 080.10	.07
t-C ¹² *H ₂ C ¹² DHC ¹² *HC ¹² N ¹⁴	4-1173	4, 2, 3← 3, 2, 2	Ground		26 080.94	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	6, 5, 2← 6, 3, 3	Ground		26 081.	
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Excited	5/2 3/2	26 082.83	.10
HDO ₂ ¹⁶	3- 43	18, , ←18, ,			26 084.	3.
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 4, 6← 8, 4, 5	Ground	19/2 17/2	26 086.9	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 4, 6← 8, 4, 5	Ground	17/2 15/2	26 086.9	.1
t-C ¹² *H ₂ C ¹² DHC ¹² *HC ¹² N ¹⁴	4-1173	4, 3, 2← 3, 3, 1	Ground		26 087.74	.1
t-C ¹² *H ₂ C ¹² DHC ¹² *HC ¹² N ¹⁴	4-1173	4, 3, 1← 3, 3, 0	Ground		26 087.74	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 4, 6← 8, 4, 5	Ground	21/2 19/2	26 088.9	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 4, 6← 8, 4, 5	Ground	15/2 13/2	26 088.9	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	6, 1, 5← 6, 0, 6	Ground		26 089.45	.03
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	10, 3, 7←10, 2, 8	Ground		26 091.38	.03
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹³ H	3-1073	5, ← 4,	Ground		26 093.5	.1
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Excited	1/2 3/2	26 094.56	.10
C ¹² *HC ¹² D:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1203	3, 1, 2← 2, 1, 1	Ground		26 098.0	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			26 099.	5.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ¹⁶	3- 181	3, 1, 2← 2, 1, 1	Ground		26 101.23	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported			26 105.14	
t-C ¹² *H ₂ C ¹² DHC ¹² *HC ¹² N ¹⁴	4-1173	4, 2, 2← 3, 2, 1	Ground		26 105.89	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	8, 5, 3← 8, 5, 4	Ground		26 107.98	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 0, 5← 4, 0, 4	Ground	11/2 9/2	26 108.30	.15
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 4, 5← 8, 4, 4	Ground	19/2 17/2	26 110.3	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 4, 5← 8, 4, 4	Ground	17/2 15/2	26 110.3	.1
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	3, 2, 1← 2, 2, 0	Ground		26 110.8	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 0, 5← 4, 0, 4	Ground	13/2	11/2			26 111.40	.15
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 4, 5← 8, 4, 4	Ground	21/2	19/2			26 112.3	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 4, 5← 8, 4, 4	Ground	15/2	13/2			26 112.3	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	10, 1, 9←10, 0,10	Ground					26 115.03	.2
C ¹² Cl ³⁵ Cl ₂ ³⁷ C ¹² N ¹⁴	4- 583	8, , ← 7, ,	Ground					26 115.9	1.0
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						26 116.4	.3
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 0, 5← 4, 0, 4	Ground	9/2	7/2			26 116.67	.15
Ti ²⁰³ Cl ³⁷	1-	5← 4	Ground					26 119.36	0.10
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	5, 0, 5← 4, 0, 4	Ground	7/2	5/2			26 119.37	.15
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 120.	5.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					26 120.50	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 3← 2, 1, 2	Ground					26 124.57	.1
C ¹² H ₃ C ¹² F ¹⁹ :C ¹² H ₂	3- 721	8, 5, 3← 8, 5, 4	Ground					26 125.28	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 0, 4← 3, 1, 3	Ground	7/2	5/2			26 125.90	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 0, 4← 3, 1, 3	Ground	9/2	7/2			26 125.90	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 0, 4← 3, 1, 3	Ground	5/2	3/2			26 128.35	
C ¹² D C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 0, 4← 3, 1, 3	Ground	11/2	9/2			26 128.35	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 133.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 134.72	.1
C ¹² *DC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1202	3, 1, 2← 2, 1, 1	Ground					26 135.7	.1
C ¹² Cl ³⁵ Cl ₂ ³⁷ C ¹² N ¹⁴	4- 583	8, , ← 7, ,	Excited					26 142.3	1.0
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 3← 2, 1, 2	Excited					26 143.64	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 3← 2, 1, 2	Ground					26 144.2	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					26 144.27	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					26 144.7	.1
C ₈ ¹² H ₁₃ Br ⁷⁹	4-1331	18, ←17,	Excited					26 146.	
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	7, 1, 6← 7, 0, 7	Ground					26 146.5	.3
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						26 148.24	.01
P ³¹ Cl ₃ ³⁵	4-1521	5, ← 4,	Excited					26 152.	10.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	7, 6, 2← 7, 4, 3	Excited					26 152.0	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	7/2	3	3/2	3	26 158.02	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	3/2	2	3/2	3	26 160.72	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	7/2	3	3/2	2	26 161.73	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 162.06	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	2		1		26 163.24	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	3/2	2	3/2	2	26 164.10	.1
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Ground	3/2		3/2		26 164.48	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	3, 1, 3← 2, 0, 2	Ground	3/2		1/2		26 165.30	.2
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	5/2	1	3/2	0	26 165.52	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	1/2	1	5/2	2	26 165.52	.1
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 1, 3← 2, 1, 2	Ground					26 165.87	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	7/2	5	5/2	4	26 165.95	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	1/2	2	5/2	2	26 167.72	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	5/2	4	3/2	3	26 168.50	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	3, 1, 3← 2, 0, 2	Ground	9/2		7/2		26 169.10	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	3, 1, 3← 2, 0, 2	Ground		5/2		3/2	26 169.10	.2
P ³¹ Cl ₃ ³⁵	4-1521	5, ← 4,	Ground					26 171.	1.
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	5/2	3	3/2	3	26 171.10	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	3, 1, 3← 2, 0, 2	Ground		7/2		5/2	26 172.95	.2
Li ⁷ I ¹²⁷	1-	1← 0	Excited		5/2		5/2	26 173.72	0.10
C ₆ H ₅ F ¹⁹	4-1281	Not Reported						26 174.	5.
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground		2		1	26 174.12	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	5/2	3	3/2	2	26 174.81	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	7/2	3	5/2	2	26 176.10	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	3/2	2	5/2	2	26 178.62	.1
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Ground		5/2		3/2	26 179.18	.05
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	2, 2, 1← 1, 1, 0	Ground	5/2	4	5/2	4	26 179.44	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 3← 2, 1, 2	Excited					26 180.33	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 3← 2, 1, 2	Excited					26 180.7	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 3← 4, 1, 4	Ground		5		5	26 181.00	.2
C ₈ H ₁₃ Cl ³⁵	4-1341	12, ←11,	Ground					26 182.0	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	12, 8, 4←12, 8, 5	Ground					26 182.4	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 3← 4, 1, 4	Ground		11		11	26 182.60	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 3← 4, 1, 4	Ground		5		5	26 182.60	.2
C ¹² DHCl ₂ ³⁵	4- 344	5, 1, 4← 5, 0, 5	Ground					26 183.	5.
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 3← 4, 1, 4	Ground		11		11	26 183.95	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 3← 4, 1, 4	Ground		7		7	26 185.50	.2
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 5← 5, 5	Ground		13/2		11/2	26 185.73	.04
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 3← 4, 1, 4	Ground		9		9	26 186.80	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 3← 4, 1, 4	Ground		7		7	26 186.80	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 2, 3← 4, 1, 4	Ground		9		9	26 188.30	.2
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 5← 5, 5	Ground		11/2		9/2	26 189.44	.04
C ¹² D ₂ (C ¹² N ¹⁴) ₂	4- 903	10, 1, 9←10, 0,10	Ground					26 189.70	
P ³¹ Cl ₃ ³⁵	4-1521	5, ← 4,	Excited					26 190.	10.
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 4← 5, 4	Ground		13/2		11/2	26 190.49	.04
C ¹² H ₃ Cl ³⁷	4- 423	1, 0← 0, 0	Ground		1/2		3/2	26 191.00	.05
O ¹⁶ F ₂ ¹⁹	4-1611	17, 3,14←16, 4,13	Ground					26 192.22	.10
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	7, 4, 3← 7, 4, 4	Ground					26 192.50	.2
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 4← 5, 4	Ground		11/2		9/2	26 192.62	.04
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	9, 5, 4← 9, 5, 5	Ground					26 193.05	.2
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 3← 5, 3	Ground		13/2		11/2	26 194.19	.04
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					26 194.3	.1
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 3← 5, 3	Ground		11/2		9/2	26 195.06	.04
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited		5/2		7/2	26 196.540	
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	9, 5, 4← 9, 5, 5	Ground					26 196.60	.2
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited		7/2		9/2	26 196.931	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 3, 3← 5, 2, 4	Ground					26 196.98	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 1, 2← 2, 1, 1	Ground					26 197.05	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited		5/2		7/2	26 197.588	
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 0← 5, 0	Ground		11/2		9/2	26 198.31	.04

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 0← 5, 0	Ground	9/2	7/2			26 198.31	.04
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 2← 5, 2	Ground	15/2	13/2			26 198.64	.04
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 2← 5, 2	Ground	13/2	11/2			26 198.64	.04
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 0← 5, 0	Ground	15/2	13/2			26 199.01	.04
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 0← 5, 0	Ground	13/2	11/2			26 199.01	.04
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 3← 5, 3	Ground	9/2	7/2			26 199.09	.04
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	2, 2, 0← 1, 0, 1	Ground					26 199.3	.1
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 4← 5, 4	Ground	9/2	7/2			26 199.74	.04
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						26 200.	10.
C ¹² H ₃ C ¹² :C ¹² Cl ³⁷	4- 972	6, 5← 5, 5	Ground	9/2	7/2			26 200.63	.04
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					26 201.6	.1
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	5, 3, 3← 5, 2, 4	Ground					26 201.9	.3
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	4, 3, 2← 4, 2, 4	Ground					26 203.4	.3
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	3, 1, 2← 2, 1, 1	Ground					26 204.2	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 1, 2← 2, 1, 1	Ground					26 208.24	.1
c-C ¹² *H ₂ C ¹² HDC ¹² *HC ¹² N ¹⁴	4-1172	4, 1, 4← 3, 1, 3	Ground					26 208.77	.1
P ³¹ Cl ₃ ³⁵	4-1521	5, ← 4,	Excited					26 210.	10.
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	2, 0, 2← 1, 0, 1	Ground					26 214.86	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	7, 6, 2← 7, 4, 3	Excited					26 215.	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	14, 2,12←13, 3,11	Ground					26 215.43	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	5/2	7/2			26 216.380	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	7/2	9/2			26 216.771	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	14, 2,12←13, 3,11	Ground					26 216.84	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	5/2 11/2	7/2 11/2			26 217.022	
Li ⁷ T ¹²⁷	1-	1← 0	Excited	7/2	5/2			26 217.11	0.10
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	5/2	7/2			26 217.428	
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	2, 0, 2← 1, 0, 1	Ground					26 218.70	.2
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 1, 2← 2, 1, 1	Ground					26 219.05	.1
DC ¹² :C ¹² C ¹³ HO ¹⁶	4- 919	3, 1, 2← 2, 1, 1	Ground					26 221.04	.02
a-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 597	1, 1, 0← 1, 0, 1	Ground					26 226.9	.2
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	7, 4, 3← 7, 4, 4	Ground					26 228.50	.2
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 1, 2← 2, 1, 1	Ground					26 228.62	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	6, 1, 5← 6, 0, 6	Excited					26 231.29	.03
Li ⁷ T ¹²⁷	1-	1← 0	Excited	3/2	5/2			26 235.65	0.10
H ₂ C ¹² :C ¹² Cl ₂	4- 663	Not Reported	Ground					26 236.0	1.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 1, 2← 2, 1, 1	Ground					26 237.30	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground	33/2	35/2			26 239.4	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					26 239.61	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground	35/2	37/2			26 242.6	
N ¹⁵ H ₃	4-1772	9, 9← 9, 9	Ground					26 243.0	.5
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground	37/2	39/2			26 246.1	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 5/2	5/2 5/2			26 247.900	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 5/2	5/2 7/2			26 247.900	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 3/2	5/2 5/2			26 248.238	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 3/2	5/2 3/2			26 248.238	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F	Frequency MHz	Acc. ±MHz
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 1/2 5/2 3/2	26 248.300	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Ground	3/2 3/2 5/2 5/2	26 248.971	
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground	39/2 41/2	26 249.4	
DC ¹² :C ¹³ C ¹² HO ¹⁶	4- 918	3, 1, 2← 2, 1, 1	Ground		26 253.29	.02
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported			26 256.	10.
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	2, 1, 2← 1, 0, 1	Ground		26 256.39	
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	11, 2, 9←11, 2,10	Ground		26 256.50	.10
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported			26 257.63	.1
s-C ¹² DH ₂ C ¹² H ₂ C ¹² H ₃	3- 785	4, 1, 3← 4, 0, 4	Ground		26 262.62	.06
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 5/2 5/2 7/2	26 265.210	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 5/2 5/2 5/2	26 265.210	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 3/2 5/2 3/2	26 265.548	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 3/2 5/2 5/2	26 265.548	
I ¹²⁷ C ¹² N ¹⁴	4- 511	4← 3	Excited	3/2 1/2 5/2 3/2	26 265.610	
C ¹² D ₂ Cl ₂ ³⁵	4- 346	8, 1, 7← 8, 0, 8	Ground		26 268.	5.
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground		26 276.7	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			26 277.	5.
C ₆ ¹² H ₅ F ¹⁹	4-1281	39,12,27←39,12,28	Ground		26 280.	5.
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	10, 4, 6←10, 3, 7	Ground		26 281.5	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	10, 4, 6←10, 3, 7	Ground		26 282.0	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 3, 7←11, 2,10	Ground		26 282.6	.2
C ¹² H ₃ C ¹² HDF ¹⁹	3- 552	6, 1, 5← 6, 1, 6	Ground		26 283.3	.1
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 3, 7←11, 2,10	Ground		26 283.9	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 3, 7←11, 2,10	Ground		26 284.7	.2
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	4, 0, 4← 3, 0, 3	Ground	9/2 7/2	26 284.7	
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	4, 0, 4← 3, 0, 3	Ground	11/2 9/2	26 284.7	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 3, 7←11, 2,10	Ground		26 285.8	.2
H ₂ C ¹² :C ¹² Cl ³⁵ Cl ³⁷	4- 662	5, 1, 5← 4, 0, 4	Ground		26 287.3	.5
HC ¹² :C ¹² C ¹² HO ¹⁸	4- 915	3, 1, 3← 2, 1, 2	Ground		26 289.67	.05
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	9, 4, 6← 9, 4, 5	Ground		26 289.8	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	15,12, 4←15,10, 5	Ground		26 290.2	.1
Tl ²⁰³ F ¹⁹	1-	2← 1	Ground		26 291.86	0.10
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	14,11, 4←14, 9, 5	Ground		26 292.3	.1
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	4, 0, 4← 3, 0, 3	Ground	7/2 5/2	26 292.4	
H ₂ B ¹¹ H ₂ B ¹⁰ HBr ⁷⁹	4- 45	4, 0, 4← 3, 0, 3	Ground	5/2 3/2	26 292.4	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	3, 2, 2← 2, 2, 1	Ground		26 292.62	.10
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	10, 3, 7←10, 2, 8	Ground		26 293.23	.03
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			26 294.	5.
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	3, 2, 2← 2, 1, 2	Ground		26 297.	1.
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	9, 8, 2← 9, 6, 3	Ground		26 303.3	
C ¹² H ₃ C ¹³ H ₂ C ¹² H ₃	3- 783	4, 1, 3← 4, 0, 4	Ground		26 306.35	.06
C ¹² H ₃ O ¹⁶ H	3- 211	11, 2, ←11, 1,	Ground		26 313.11	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	7, 6, 1← 7, 5, 2	Ground		26 314.1	
3d-C ₆ ¹² H ₅ F ¹⁹	4-1282	6, 1, 5← 5, 1, 4	Ground		26 316.0	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	12, 7, 6←12, 7, 5	Ground		26 319.80	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F ₁ ' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 1, 3← 2, 1, 2	Ground					26 322.50	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ E	3- 192	12, 7, 6←12, 7, 5	Ground					26 326.02	
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	4, 4, 1← 4, 2, 2	Ground					26 327.3	.3
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	6, 2, 5← 6, 1, 6	Ground					26 328.5	.3
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	13,10, 4←13, 8, 5	Ground					26 328.9	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						26 329.0	.3
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	7, 6, 1← 7, 5, 2	Ground					26 329.2	.5
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	7, 6, 2← 7, 4, 3	Ground					26 333.	
O ₃ ¹⁸	4-1845	15, 3,13←16, 2,14	Ground					26 334.	
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	23, 3,21←22, 4,18	Ground					26 334.	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						26 335.6	.3
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	4, 1, 3← 4, 0, 4	Ground					26 335.9	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3,16←17, 4,13	Ground	33/2		31/2		26 337.6	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	11, 7, 4←11, 7, 5	Ground					26 338.8	.1
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	9, 1, 8← 8, 1, 7	Ground					26 339.34	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 339.57	.1
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Excited	3/2		3/2		26 340.27	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3,16←17, 4,13	Ground	35/2		33/2		26 341.9	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	Not Reported						26 342.	5.
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					26 344.7	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 346.36	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	16,13, 4←16,11, 5	Ground					26 347.5	.1
C ¹² DH ₂ C ¹² HDF ¹⁹	3- 562	3, 1, 2← 3, 0, 3	Ground					26 348.0	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3,16←17, 4,13	Ground	37/2		35/2		26 348.2	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	3, 2, 1← 2, 2, 0	Excited					26 350.	
H ₂ B ¹¹ H ₂ B ¹¹ HB ¹¹ ₂ ⁸¹	4- 42	4, 1, 3← 3, 1, 2	Ground	9/2		7/2		26 353.2	
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	3, 1, 2← 2, 1, 1	Ground					26 353.89	.02
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 3,16←17, 4,13	Ground	39/2		37/2		26 356.8	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 357.	5.
HC ¹² HO ¹⁶	4- 381	26, 4,22←26, 4,23	Ground					26 358.82	
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Excited	5/2		3/2		26 359.01	.05
O ¹⁶ F ₂ ¹⁹	4-1611	22, 4,18←21, 5,17	Ground					26 359.08	.10
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	3, 0, 3← 2, 1, 2	Excited					26 363.39	.10
C ¹² H ₃ Si ^b H ₂ D	3- 325	11, 1,10←11, 1,11						26 365.07	
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹³ N ¹⁴)	4- 905	9, 1, 8← 9, 0, 9	Ground					26 367.03	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						26 368.30	.1
P ³¹ O ¹⁸ F ₃ ¹⁹	4-1672	3, ← 2,	Ground					26 371.7	.06
C ¹² H ₃ Cl ³⁶	4- 422	1, 0← 0, 0	Ground	2		2		26 372.42	.025
S ³² *DC ¹² :C ¹² DC ¹² D:C ¹² *D	4-1165	3, 2, 1← 2, 2, 0	Ground					26 373.5	.1
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Excited	1/2		3/2		26 373.96	.05
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	3, 2, 1← 2, 2, 0	Excited					26 375.	
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	9, 2, 7← 9, 1, 8	Ground					26 375.1	.3
C ¹² H ₃ Cl ³⁶	4- 422	1, 0← 0, 0	Ground	2		3		26 376.03	.035
C ¹² H ₃ Cl ³⁶	4- 422	1, 0← 0, 0	Ground	2		1		26 377.96	.025
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	11,10, 2←11, 9, 3	Ground					26 378.0	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ₆ H ₅ F ¹⁹	4-1281	6, 5, 1← 5, 5, 0	Ground					26 378.8	.1
C ₆ H ₅ F ¹⁹	4-1281	6, 5, 2← 5, 5, 1	Ground					26 378.8	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	12, 9, 4←12, 7, 5	Ground					26 382.3	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	6, 3, 3← 6, 2, 4	Ground					26 386.24	.03
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	16, 2,14←17, 1,17	Ground					26 388.	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					26 388.4	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	7, 3, 4← 7, 2, 5	Ground					26 389.94	.2
P ³¹ O ¹⁸ F ¹⁹	4-1672	3, ← 2,	Ground					26 391.61	.10
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	8, , ← 7, ,	Ground					26 394.8	1.0
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					26 398.4	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						26 402.76	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 403.	5.
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						26 405.2	.1
2,4,6d ₃ -C ₆ H ₅ F ¹⁹	4-1284	10, 3, 8←10, 1, 9	Ground					26 405.5	.1
Ge ⁷⁰ H ₃ Cl ³⁵	4-1431	3, ← 2,	Ground					26 410.26	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 414.	5.
C ¹² HCl ₃ ³⁵	4- 261	4, ← 3,	Ground					26 417.	
Li ⁷ I ¹²⁷	1-	1← 0	Ground	5/2		5/2		26 418.44	0.10
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 2← 2, 2, 1	Excited					26 425.	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	4, 1, 3← 4, 0, 4	Excited					26 426.	2.
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	8, , ← 7, ,	Excited					26 426.0	1.0
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	4, 2, 3← 3, 2, 2	Ground					26 427.20	.2
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						26 429.08	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						26 433.48	
C ¹² DH ₂ C ¹² HDF ¹⁹	3- 562	3, 0, 3← 2, 1, 2	Ground					26 433.5	.1
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	Not Reported						26 436.88	.01
C ¹² H ₃ C ¹² H ₂ O ¹⁶ H	3- 581	2, 1, 1← 2, 0, 2	Ground					26 437.15	.01
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	2, 1, 1← 2, 0, 2	Ground	9/2		9/2		26 438.02	.05
C ¹² HCl ₃ ³⁵ F ¹⁹	4- 251	10, 4, 7←10, 3, 7	Ground	17/2		17/2		26 439.4	.05
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	11, 8, 4←11, 6, 5	Ground					26 439.9	.1
C ¹² HCl ₃ ³⁵ F ¹⁹	4- 251	10, 4, 7←10, 3, 7	Ground	23/2		23/2		26 440.0	.05
C ¹² D ₃ Si ²⁸ F ¹⁹	3- 132	4, ← 3,	Excited					26 440.62	
C ¹² HCl ₃ ³⁵ F ¹⁹	4- 251	10, 4, 7←10, 3, 7	Ground	19/2		19/2		26 443.8	.05
C ¹² HCl ₃ ³⁵ F ¹⁹	4- 251	10, 4, 7←10, 3, 7	Ground	21/2		21/2		26 444.4	.05
C ₆ H ₅ F ¹⁹	4-1281	6, 3, 4← 5, 3, 3	Ground					26 445.2	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground					26 445.5	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						26 445.68	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	10, 6, 4←10, 6, 5	Ground					26 446.7	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 448.15	.1
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 2← 2, 2, 1	Excited					26 450.	
HC ¹² *:C ¹² HO ¹⁶ C ¹² O ¹⁶ O ¹⁶ *	4- 931	4, 0, 4← 3, 0, 3	Ground					26 450.13	.10
HC ¹³ :C ¹² C ¹² N ¹⁴	4- 882	3← 2	Ground					26 450.73	
Na ²³ Br ⁷⁹	1-	3← 2	Excited	7/2		5/2		26 455.8	.8
Na ²³ Br ⁷⁹	1-	3← 2	Excited	9/2		7/2		26 455.8	.8
C ¹³ H ₃ C ¹² H ₂ C ¹² H ₃	3- 782	4, 1, 3← 4, 0, 4	Ground					26 456.74	.06

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Li ⁷ I ¹²⁷	1-	1← 0	Ground	7/2	5/2			26 460.14	0.10
C ¹² H ₅ Cl ³⁵	4-1271	9, 3, 6← 8, 3, 5	Ground	17/2	15/2			26 460.2	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 3, 6← 8, 3, 5	Ground	19/2	17/2			26 460.2	.1
C ¹² H ₅ F ¹⁹	4-1281	7, 1, 7← 6, 1, 6	Ground					26 460.7	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 3, 6← 8, 3, 5	Ground	21/2	19/2			26 461.4	.1
C ¹² H ₅ Cl ³⁵	4-1271	9, 3, 6← 8, 3, 5	Ground	15/2	13/2			26 461.4	.1
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	4, 2, 3← 3, 2, 2	Ground					26 461.42	.2
C ¹² D ₃ Si ²⁸ F ¹⁹	3- 132	4, ← 3,	Excited					26 463.93	
H ₂ C ¹² :C ¹² F ¹⁹	4- 681	2, 1, 2← 1, 1, 1	Ground					26 465.6	.3
C ¹² H ₂ DC ¹² HDF ¹⁹	3- 557	4, 1, 3← 4, 0, 4	Ground					26 466.0	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 1, 3← 2, 0, 2	Ground	7/2	7/2			26 467.75	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 470.	5.
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 1, 3← 2, 0, 2	Ground	3/2	1/2			26 471.05	.2
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Excited	3/2	3/2			26 472.68	.10
t-C ¹² *H ₂ C ¹² DHC ¹² *HC ¹² N ¹⁴	4-1173	4, 1, 3← 3, 1, 2	Ground					26 473.41	.1
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 1, 2← 2, 1, 1	Ground					26 474.7	.1
Na ²³ Br ⁸¹	1-	3← 2	Excited	9/2	7/2			26 475.0	.8
Na ²³ Br ⁸¹	1-	3← 2	Excited	7/2	5/2			26 475.0	.8
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 1, 3← 2, 0, 2	Ground	9/2	7/2			26 476.55	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 1, 3← 2, 0, 2	Ground	5/2	3/2			26 476.55	.2
C ¹² *H ₂ S ³⁴ C ¹² *H ₂	4- 852	4, 1, 4← 4, 1, 3	Ground					26 477.7	.2
Li ⁷ I ¹²⁷	1-	1← 0	Ground	3/2	5/2			26 477.88	0.10
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						26 481.08	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 1, 3← 2, 0, 2	Ground	7/2	5/2			26 481.53	.2
C ¹² H ₅ F ¹⁹	4-1281	6, 4, 3← 5, 4, 2	Ground					26 483.2	.1
N ¹⁴ O ₂ ⁶	4-1801	24, 1,23←23, 2,22	Ground					26 484.	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 1, 3← 2, 0, 2	Ground	3/2	3/2			26 485.20	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	3, 1, 3← 2, 0, 2	Ground	5/2	5/2			26 485.20	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 487.00	.1
C ¹² H ₃ C ¹² H:C ¹² O ¹⁶	3- 681	3, 1, 2← 2, 1, 1	Ground					26 487.7	.1
C ¹² D ₃ Si ²⁸ F ¹⁹	3- 132	4, ← 3,	Excited					26 488.90	
Tl ²⁰⁵ F ¹⁹	1-	2← 1	Excited					26 489.86	.20
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Excited	5/2	3/2			26 491.39	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 493.54	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 493.82	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 494.	5.
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	10, 7, 4←10, 5, 5	Ground					26 494.1	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						26 494.55	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	17,14, 4←17,12, 5	Ground					26 495.8	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	9, 1, 8← 9, 0, 9	Ground					26 497.38	
HC ¹² :C ¹² C ¹² N ¹⁵	4- 885	3← 2	Ground					26 501.46	
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	1, 1, 1← 0, 0, 0	Ground					26 501.5	.2
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² H	3-1077	5, 1, 5← 4, 1, 4	Ground					26 504.7	.1
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Excited	1/2	3/2			26 506.38	.10
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	11, 3, 8←11, 2, 9	Ground					26 507.05	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	10, 3, 7←10, 2, 8	Ground					26 508.54	.03
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	4, ← 3,	Ground					26 516.20	.1
C ¹² H ₃ C ¹² HDF ¹⁹	3- 552	3, 1, 2← 3, 0, 3	Ground					26 516.7	.1
N ¹⁴ H ₃	4-1771	8, 8← 8, 8	Ground					26 518.91	.10
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						26 519.40	.1
C ¹² ₃ HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	9, 5, 4← 9, 5, 5	Ground					26 520.2	.1
C ₆ ¹² H ₅ F ¹⁹	4-1281	6, 4, 2← 5, 4, 1	Ground					26 528.9	.1
S ³² P ³¹ F ₃ ¹⁹	4-1691	5, ← 4,	Excited					26 531.5	1.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	27,15, ←26,14,	Ground					26 533.12	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	27,15, ←26,14,	Ground					26 533.80	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	2, 1, 1← 2, 0, 2	Ground		7/2		5/2	26 538.5	1.
C ¹² ₃ HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	9, 6, 4← 9, 4, 5	Ground					26 540.6	.1
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	4, ← 3,	Excited					26 545.72	
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	9, , ← 9, ,	Ground					26 548.0	.1
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	11, 2, 9←11, 2,10	Ground					26 548.8	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						26 549.	3.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					26 550.15	.1
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	11, 3, 8←11, 2, 9	Ground					26 550.51	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						26 551.16	.1
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	7, 1, 6← 7, 0, 7	Ground					26 552.38	.1
S ³² P ³¹ F ₃ ¹⁹	4-1691	5, ← 4,	Excited					26 553.58	.08
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					26 554.5	.1
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	10, 4, 6←10, 3, 7	Ground					26 557.5	.3
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					26 560.6	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					26 562.	5.
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1,23←23, 2,22	Ground					26 563.25	
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	2, 2, 1← 2, 1, 2	Ground					26 565.	
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1,23←23, 2,22	Ground					26 569.21	
C ¹² ₃ HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	8, 4, 4← 8, 4, 5	Ground					26 569.7	.1
c-C ¹² ₃ H ₂ C ¹² HDC ¹² *HC ¹² N ¹⁴	4-1172	4, 0, 4← 3, 0, 3	Ground					26 569.75	.1
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Ground		3/2		3/2	26 570.73	.05
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 0, ← 1, 0,	Ground					26 572.5	.2
Cl ₂ O ¹⁶	4-1484	17, 1,16←16, 2,15	Ground					26 575.2	
S ³² P ³¹ F ₃ ¹⁹	4-1691	5, ← 4,	Ground					26 576.36	.03
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1,23←23, 2,22	Ground					26 577.02	
Cl ₂ O ¹⁶	4-1484	17, 1,16←16, 2,15	Ground					26 577.6	
C ¹² ₃ HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	8, 5, 4← 8, 3, 5	Ground					26 577.8	.1
Cl ₂ O ¹⁶	4-1484	17, 1,16←16, 2,15	Ground					26 580.9	
Cl ₂ O ¹⁶	4-1484	17, 1,16←16, 2,15	Ground					26 584.0	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	8, 7, 2← 8, 5, 3	Excited					26 587.1	.1
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	26 587.14	
Cl ₂ O ¹⁶	4-1484	17, 1,16←16, 2,15	Ground					26 587.2	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	3, 2, 1← 2, 2, 0	Ground		5/2		5/2	26 587.5	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 588.65	.1
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Ground		5/2		3/2	26 589.40	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Cl ^b O ¹⁶	4-1484	17, 1, 16←16, 2, 15	Ground					26 589.5	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						26 589.80	.1
C ¹² H ₃ B ^b F ¹⁹	3- 91	2, , ← 1, ,	Ground					26 590.5	.1
c-C ¹² *H ₂ C ¹² HDC ¹² *HC ¹² N ¹⁴	4-1172	4, 2, 3← 3, 2, 2	Ground					26 591.95	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	7, 3, 4← 7, 2, 5	Ground					26 593.24	.2
S ³² P ³¹ F ¹⁹	4-1691	5, ← 4,	Excited					26 595.5	.1
C ¹³ H ₃ C ¹² :C ¹² C ¹² F ¹⁹	3- 893	10, ← 9,	Ground					26 596.5	.5
(C ¹² H ₃) ₂ O ¹⁶	3- 591	12, 3, 9←11, 4, 8	Ground					26 598.6	.2
c-C ¹² *H ₂ C ¹² HDC ¹² *HC ¹² N ¹⁴	4-1172	4, 3, 1← 3, 3, 0	Ground					26 598.95	.1
c-C ¹² *H ₂ C ¹² HDC ¹² *HC ¹² N ¹⁴	4-1172	4, 3, 2← 3, 3, 1	Ground					26 598.95	.1
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	3, 1, 3← 2, 1, 2	Ground					26 600.00	.05
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		26 600.60	
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 1← 2, 2, 0	Ground	3/2		3/2		26 601.4	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	7, 3, 4← 7, 3, 5	Ground					26 602.6	.1
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1, 23←23, 2, 22	Ground					26 603.65	
C ¹² H ₃ Cl ³⁵	4- 421	1, 0← 0, 0	Ground	1/2		3/2		26 604.38	.05
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	7, 4, 4← 7, 2, 5	Ground					26 605.2	.1
C ¹² H ₅ F ¹⁹	4-1281	7, 0, 7← 6, 0, 6	Ground					26 605.3	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 605.60	
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 1← 2, 2, 0	Ground	9/2		7/2		26 606.22	
C ¹² H ₃ C ¹² H ₂ C ¹² H ₃	3- 781	4, 1, 3← 4, 0, 4	Ground					26 609.24	.03
C ¹² H ₃ C ¹³ :C ¹² Cl ³⁵	4- 975	6, 0← 5, 0	Ground	9/2		7/2		26 611.16	.04
C ¹² H ₃ C ¹³ :C ¹² Cl ³⁵	4- 975	6, 0← 5, 0	Ground	11/2		9/2		26 611.16	.04
C ¹² H ₃ C ¹³ :C ¹² Cl ³⁵	4- 975	6, 0← 5, 0	Ground	13/2		11/2		26 612.05	.04
C ¹² H ₃ C ¹³ :C ¹² Cl ³⁵	4- 975	6, 0← 5, 0	Ground	15/2		13/2		26 612.05	.04
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					26 612.3	.2
C ¹² H ₅ Cl ³⁵	4-1271	9, 2, 7← 8, 2, 6	Ground					26 616.	5.0
c-C ¹² *H ₂ C ¹² HDC ¹² *HC ¹² N ¹⁴	4-1172	4, 2, 2← 3, 2, 1	Ground					26 616.19	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						26 616.38	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						26 617.97	.1
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1, 23←23, 2, 22	Ground					26 619.38	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					26 619.6	.1
N ¹⁴ O ₂ Cl ³⁷	4-1462	3, 2, 1← 2, 2, 0	Ground	3/2		1/2		26 619.69	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	2, 1, 1← 2, 0, 2	Ground	7/2		7/2		26 620.	2.
Na ²³ Br ⁷⁹	1-	3← 2	Excited	9/2		7/2		26 621.8	.8
Na ²³ Br ⁷⁹	1-	3← 2	Excited	7/2		5/2		26 621.8	.8
HC ¹³ :C ¹² C ¹² HO ¹⁶	4- 912	3, 1, 3← 2, 1, 2	Ground					26 622.49	.02
C ¹³ *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1205	3, 1, 2← 2, 1, 1	Ground					26 622.8	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	4, 1, 3← 4, 0, 4	Excited					26 623.1	.1
C ¹² H ₅ O ¹⁶ H	3-1051	7, 0, 7← 6, 1, 6	Ground					26 623.56	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	6, 2, 4← 6, 2, 5	Ground					26 623.7	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	6, 3, 4← 6, 1, 5	Ground					26 624.4	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	10, 3, 7←10, 2, 8	Excited					26 626.69	.03
H ₂ C ¹² :C ¹² F ¹⁹	4- 681	4, 2, 2← 4, 2, 3	Ground					26 627.6	.3
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	8, 7, 2← 8, 5, 3	Excited					26 630.1	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ₆ ¹² H ₅ Cl ³⁵	4-1271	Not Reported	Ground					26 630.9	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 1, 8← 8, 1, 7	Ground	15/2	13/2			26 631.1	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 1, 8← 8, 1, 7	Ground	17/2	15/2			26 631.1	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 1, 8← 8, 1, 7	Ground	21/2	19/2			26 631.1	.1
C ₆ ¹² H ₅ Cl ³⁵	4-1271	9, 1, 8← 8, 1, 7	Ground	19/2	17/2			26 631.1	.1
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 2← 3, 2	Excited	9/2	7/2			26 631.58	
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1,23←23, 2,22	Ground					26 633.83	
C ¹² *HC ¹² H:C ¹² DC ¹² H:C ¹² HN ¹⁴ *	4-1204	11, 9, 3←11, 7, 4	Ground					26 634.1	.1
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 2← 3, 2	Excited	7/2	5/2			26 634.31	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	4, 0, 4← 3, 0, 3	Ground					26 634.8	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	4, 1, 4← 3, 1, 3	Ground					26 634.8	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	5, 2, 4← 5, 0, 5	Ground					26 636.9	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	5, 1, 4← 5, 1, 5	Ground					26 636.9	.1
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 2← 3, 2	Excited	11/2	9/2			26 639.40	
Na ²³ Br ⁸¹	1-	3← 2	Excited	7/2	5/2			26 639.9	.8
Na ²³ Br ⁸¹	1-	3← 2	Excited	9/2	7/2			26 639.9	.8
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 0, 3← 2, 0, 2	Ground					26 641.64	.1
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 2← 3, 2	Excited	5/2	3/2			26 642.22	
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	3, 0, 3← 2, 1, 2	Ground					26 642.93	.10
Na ²³ Br ⁸¹	1-	3← 2	Excited	5/2	3/2			26 643.2	.8
Na ²³ Br ⁸¹	1-	3← 2	Excited	3/2	1/2			26 643.2	.8
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	4, 1, 4← 3, 1, 3	Ground					26 643.54	.05
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	10, 1, 9←10, 0,10	Ground					26 645.25	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	3, 1, 2← 3, 1, 3	Ground					26 646.2	.3
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	6, 1, ← 5, 1,	Ground					26 646.22	.5
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1,23←23, 2,22	Ground					26 647.17	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	2, 1, 1← 2, 0, 2	Ground	5/2	7/2			26 647.50	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 650.	5.
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² H	3-1077	5, 1, 4← 4, 1, 3	Ground					26 650.1	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 654.86	.1
N ¹⁴ H ₃	4-1771	13,12←13,12	Ground					26 655.00	.10
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground	39/2	41/2			26 657.1	
(C ¹² H ₃) ₃ C ¹² C ¹³ :C ¹² H	3-1074	5, ← 4,	Ground					26 659.1	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	2, 2, 1← 1, 1, 1	Ground					26 659.23	
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground	37/2	39/2			26 661.3	
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						26 661.5	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	2, 2, 1← 1, 1, 1	Ground					26 662.15	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 1, 4← 5, 1, 5	Ground	6	6			26 664.83	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 1, 4← 5, 1, 5	Ground	4	4			26 664.83	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	8, 7, 2← 8, 5, 3	Excited					26 665.	
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground	35/2	37/2			26 665.1	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						26 666.14	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	5, 1, 4← 5, 1, 5	Ground	5	5			26 667.27	.10
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 2← 2, 2, 1	Ground	5/2	5/2			26 667.77	
Cl ³⁵ O ₂ ¹⁶	4-1381	18, 5,14←19, 4,15	Ground	33/2	35/2			26 668.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					26 668.7	.2
Tl ²⁰⁵ F ¹⁹	1-	2← 1	Ground					26 669.76	0.10
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, ← 3,	Ground					26 669.78	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 3← 3, 3	Ground	7/2		7/2		26 670.19	
C ¹² D ₂ Cl ₂ ³⁵	4- 346	1, 1, 1← 0, 0, 0	Ground					26 670.2	.2
C ¹² H ₂ Cl ₃ ³⁵ Si ²⁸ H ₃	3- 231	10, 1, 9←10, 0,10	Ground					26 672.38	.2
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 3← 3, 3	Ground	9/2		7/2		26 672.59	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 3← 3, 3	Ground	5/2		5/2		26 674.77	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	8, 5, 3← 8, 5, 4	Ground					26 679.20	.2
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 2← 3, 2	Ground	9/2		7/2		26 679.62	
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1,23←23, 2,22	Ground					26 681.4	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 3← 3, 3	Ground	7/2		5/2		26 681.52	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 2← 3, 2	Ground	7/2		5/2		26 682.30	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 1← 3, 1	Ground	7/2		5/2		26 682.81	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 1← 3, 1	Ground	9/2		7/2		26 683.78	
C ¹² H ₃ C ¹² H ₂ C ¹³ N ¹⁴	3- 732	3, 0, 3← 2, 0, 2	Ground					26 684.09	.1
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 2← 2, 2, 1	Ground	3/2		3/2		26 684.68	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 1← 3, 1	Ground	5/2		3/2		26 684.69	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 1← 3, 1	Ground	11/2		9/2		26 685.73	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 2← 3, 2	Ground	11/2		9/2		26 687.38	
O ₃ ¹⁸	4-1845	14, 2,12←15, 1,15	Ground					26 690.	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 2← 3, 2	Ground	5/2		3/2		26 690.14	
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 3← 3, 3	Ground	11/2		9/2		26 690.14	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 2← 2, 2, 1	Ground	7/2		7/2		26 691.44	
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	8, ← 7,	Excited					26 691.9	1.0
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 0, 3← 2, 0, 2	Ground					26 694.37	
N ¹⁴ O ₂ ¹⁶	4-1801	24, 1,23←23, 2,22	Ground					26 695.08	
Si ²⁸ H ₃ Cl ³⁵	4-1441	2, ← 1,	Ground					26 695.24	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 695.43	.1
C ¹² F ₃ ¹⁹ Cl ³⁵ /	4- 161	4, 3← 3, 3	Ground	9/2		9/2		26 697.04	
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	3, 1, 3← 2, 1, 2	Ground					26 697.8	.2
C ¹² F ₃ ¹⁹ Cl ³⁵	4- 161	4, 3← 3, 3	Ground	5/2		3/2		26 699.14	
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	8, ← 7,	Excited					26 705.4	1.0
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 2← 2, 2, 1	Ground	1/2		1/2		26 708.33	
C ¹² H ₃ C ¹² H ₂ C ¹³ N ¹⁴	3- 732	3, 2, 2← 2, 2, 1	Ground					26 713.9	.5
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					26 715.3	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 717.89	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	Not Reported	Ground					26 723.74	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	8, 7, 2← 8, 5, 3	Ground					26 725.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 725.	5.
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						26 726.	1.
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	13, 2,11←13, 1,12	Ground					26 726.06	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 728.77	.1
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	8, 5, 3← 8, 5, 4	Ground					26 732.94	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					26 733.54	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	2, 0, 2← 1, 0, 1	Ground					26 734.61	.2
C ¹² H ₅ O ¹⁶ H	3-1051	7, 0, 7← 6, 1, 6	Ground					26 735.31	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	10, 3, 7←10, 2, 8	Ground					26 735.76	.03
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	2, 0, 2← 1, 0, 1	Ground					26 739.20	.2
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3- 461	8, 5, 3← 8, 5, 4	Ground					26 740.4	
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3- 461	8, 5, 3← 8, 5, 4	Ground					26 741.1	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						26 741.37	.1
C ¹² H ₃ C ¹² H ₂ C ¹³ N ¹⁴	3- 732	3, 2, 1← 2, 2, 0	Ground					26 743.8	.5
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	11/2		11/2		26 744.	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						26 745.20	.1
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	7, 1, 7← 6, 2, 4	Ground					26 745.5	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	11/2		11/2		26 745.74	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 746.	5.
HC ¹² :C ¹² C ¹² HO ¹⁸	4- 915	3, 0, 3← 2, 0, 2	Ground					26 747.54	.05
3d-C ¹² H ₅ F ¹⁹	4-1282	6, 3, 3← 5, 3, 2	Ground					26 754.7	.1
HC ¹² :C ¹² C ¹² HO ¹⁸	4- 915	3, 2, 2← 2, 2, 1	Ground					26 755.15	.05
C ¹² H ₅ F ¹⁹	4-1281	21, 6,15←21, 6,16	Ground					26 758.	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					26 758.1	.1
HC ¹² :C ¹² C ¹² HO ¹⁸	4- 915	3, 2, 1← 2, 2, 0	Ground					26 759.87	.05
C ¹² O ¹⁶ Cl ³⁵ ₂	4- 181	6, 2, 5← 6, 1, 6	Ground					26 765.1	.3
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 0, 3← 2, 0, 2	Ground					26 765.43	
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁵	3-1022	5, ← 4,	Ground					26 768.7	.1
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	12, 4, 8←12, 3, 9	Ground					26 771.04	.2
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 5← 5, 5	Ground	13/2		11/2		26 771.84	.04
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						26 772.7	
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	7, 5, 2← 7, 4, 3	Ground					26 773.22	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	18,15, 4←18,13, 5	Ground					26 775.7	.1
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 5← 5, 5	Ground	11/2		9/2		26 776.56	.04
S ³² O ¹⁶ ₂	4-1831	25, 4,22←24, 5,19	Ground					26 777.20	.1
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 4← 5, 4	Ground	13/2		11/2		26 777.41	.04
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					26 778.9	.1
Sb ^b H ₂ D	4-1797	2, 1, 2← 2, 0, 2	Ground					26 780.	
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 4← 5, 4	Ground	11/2		9/2		26 780.12	.04
C ¹² HBr ⁸¹	4- 242	11, ←10,	Ground					26 781.1	.5
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	12, 4, 8←12, 3, 9	Ground					26 781.28	.2
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	2, 2, 0← 1, 0, 1	Ground					26 783.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					26 783.18	.1
Na ²³ Br ⁷⁹	1-	3← 2	Excited	9/2		7/2		26 785.63	.10
Na ²³ Br ⁷⁹	1-	3← 2	Excited	7/2		5/2		26 785.63	.10
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 0← 5, 0	Ground	11/2		9/2		26 786.53	.04
C ¹² H C ¹² :C ¹² Cl ³⁵	4- 971	6, 0← 5, 0	Ground	9/2		7/2		26 786.53	.04
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 0← 5, 0	Ground	15/2		13/2		26 787.43	.04
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 0← 5, 0	Ground	13/2		11/2		26 787.43	.04
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 3← 5, 3	Ground	9/2		7/2		26 787.99	.04
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 789.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 4← 5, 4	Ground	9/2		7/2		26 789.21	.04
Na ²³ Br ⁷⁹	1-	3← 2	Excited	5/2		3/2		26 789.51	.30
Na ²³ Br ⁷⁹	1-	3← 2	Excited	3/2		1/2		26 789.51	.30
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	10, 1, 9←10, 0,10	Ground	17/2		17/2		26 790.7	.1
C ¹² H ₃ C ¹² :C ¹² Cl ³⁵	4- 971	6, 5← 5, 5	Ground	9/2		7/2		26 790.76	.04
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	10, 1, 9←10, 0,10	Ground	23/2		23/2		26 791.7	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	10, 1, 9←10, 0,10	Ground					26 794.74	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	5/2		5/2		26 796.	
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	3, 1, 2← 2, 1, 1	Ground					26 796.36	.1
C ¹² H ₃ Si ¹⁸ HD ₂	3- 326	11, 1,10←11, 1,11						26 797.15	.2
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	10, 1, 9←10, 0,10	Ground	19/2		19/2		26 797.7	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	10, 1, 9←10, 0,10	Ground	21/2		21/2		26 798.7	.1
Na ²³ Br ⁸¹	1-	3← 2	Excited	7/2		5/2		26 803.55	.10
Na ²³ Br ⁸¹	1-	3← 2	Excited	9/2		7/2		26 803.55	.10
Na ²³ Br ⁸¹	1-	3← 2	Excited	5/2		3/2		26 806.32	.40
Na ²³ Br ⁸¹	1-	3← 2	Excited	3/2		1/2		26 806.32	.40
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	5, 1← 4, 1	Ground					26 807.3	.1
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	4, 3, 2← 4, 1, 3	Ground					26 815.7	.3
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	5, ← 4,	Ground					26 816.8	.1
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	4, 0, 4← 3, 0, 3	Ground					26 817.10	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 0, 3← 2, 0, 2	Ground					26 817.80	.1
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	9, 1, 8← 9, 1, 9	Ground					26 818.2	.1
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	5, ← 4,	Ground					26 820.4	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						26 821.	3.
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	4, 0, 4← 3, 1, 3	Ground					26 821.50	.1
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	10, 4, 7←10, 3, 8	Ground					26 821.7	
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	4, 0, 4← 3, 1, 3	Ground					26 822.75	.2
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	4, 0, 4← 3, 1, 3	Ground					26 824.00	.1
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 0, 3← 2, 0, 2	Ground					26 824.88	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 827.	5.
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 0, 3← 2, 0, 2	Ground					26 829.3	.2
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	5, ← 4,	Ground					26 831.9	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						26 832.0	.3
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	7/2		7/2		26 835.20	.05
C ¹² D ₃ C ¹³ :C ¹² C ¹² F ₃ ¹⁹	3- 895	11, ←10,	Ground					26 836.0	2.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		26 840.46	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	7/2		9/2		26 843.04	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		26 845.	
2,4,6d ₃ -C ₆ ¹² H ₅ F ¹⁹	4-1284	6, 2, 4← 5, 2, 3	Ground					26 847.2	.1
C ¹² H ₃ O ¹⁶ H	3- 211	12, 2, ←12, 1,	Ground					26 847.27	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	10, 1, 9←10, 0,10	Ground					26 847.33	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 2← 2, 2, 1	Ground	3		2		26 847.89	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	10, 1, 9←10, 0,10	Ground	17/2		17/2		26 848.5	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 2← 2, 2, 1	Ground					26 848.70	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 2← 2, 2, 1	Ground	4		3		26 848.95	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	10, 1, 9←10, 0,10	Ground	23/2		23/2		26 849.4	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 2← 2, 2, 1	Ground	2		1		26 849.51	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	10, 1, 9←10, 0,10	Ground					26 852.29	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					26 854.	
C ¹³ H ₃ O ¹⁶ H	3- 213	27, 2, ←27, 1,	Ground					26 855.01	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	10, 1, 9←10, 0,10	Ground	19/2		19/2		26 855.1	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	10, 1, 9←10, 0,10	Ground	21/2		21/2		26 856.0	.1
(C ¹² H ₃) ₃ C ¹² C ¹² ; C ¹² H	3-1071	5, ← 4,	Excited					26 857.7	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 2← 2, 2, 1	Ground					26 859.1	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 0, 3← 2, 0, 2	Excited					26 860.5	.2
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	5, 1, 5← 5, 1, 4	Ground					26 865.5	.3
HC ¹³ ; C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 866.	5.
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 2← 2, 2, 1	Ground					26 866.1	.2
C ¹² H ₂ Cl ³⁷ C ¹² ; C ¹² H	4- 992	1, 1, 1← 0, 0, 0	Ground					26 868.46	
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	8, 4, 4← 8, 3, 5	Ground					26 870.71	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 872.2	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 874.2	
(C ¹² H ₃) ₃ C ¹² C ¹² ; C ¹² H	3-1071	5, 1← 4, 1	Excited					26 874.5	.1
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	4, 1, 4← 3, 0, 3	Ground					26 877.25	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 1← 2, 2, 0	Ground	3		2		26 877.45	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 1← 2, 2, 0	Ground					26 878.27	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 1← 2, 2, 0	Ground					26 878.3	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 1← 2, 2, 0	Ground	4		3		26 878.54	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 1← 2, 2, 0	Ground	2		1		26 879.08	.1
HDO ¹⁶	4-1712	7, 1, 7← 6, 2, 4	Ground					26 880.38	.05
H ₂ C ¹² ; C ¹² F ₂ ¹⁹	4- 681	3, 2, 2← 3, 0, 3	Ground					26 881.2	.3
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	11, 3←12, 2	Ground					26 883.9	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	10, 7, 3←10, 6, 4	Excited					26 885.	5.
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 1← 2, 2, 0	Ground					26 885.3	.2
C ¹² H ₂ ; C ¹² HC ¹² F ¹⁹ ; C ¹² H ₂	3- 911	10, 3, 7←10, 2, 8	Excited					26 886.28	.03
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 2← 2, 2, 1	Excited					26 889.6	.2
C ¹² H ₂ ; C ¹² HC ¹² HO ¹⁶	3- 691	3, 0, 3← 2, 0, 2	Ground					26 895.18	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	11, 3←12, 2	Ground					26 895.4	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	5/2		7/2		26 900.	1.
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	4, 1, 4← 3, 0, 3	Ground					26 903.58	.2
HC ¹³ ; C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						26 905.	5.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					26 906.3	.1
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	9, 4, 5← 9, 3, 6	Ground					26 909.85	.1
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						26 911.26	.05
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	9, 4, 5← 9, 3, 6	Ground					26 911.43	.2
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						26 912.37	.05
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	9, 4, 5← 9, 3, 6	Ground					26 913.00	.1
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						26 914.32	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					26 916.24	.1
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						26 917.65	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 1, 2	Ground					26 918.07	.1
C ¹² DHC ¹³⁵ Cl ³⁷	4- 345	6, 1, 5← 6, 0, 6	Ground					26 920.	5.
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						26 920.64	.1
C ^b H ^b ₃ C ^b H ^b Cl ³⁵	3- 548	Not Reported						26 920.98	.05
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 2, 1← 2, 2, 0	Excited					26 922.1	.2
C ^b H ^b ₃ C ^b H ^b Cl ³⁵	3- 548	Not Reported						26 923.82	.05
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	4, 0, 4← 3, 1, 3	Ground	3		2		26 924.05	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	4, 0, 4← 3, 1, 3	Ground	4		3		26 924.05	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	4, 0, 4← 3, 1, 3	Ground	5		4		26 924.05	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	3, 1, 2← 2, 1, 1	Ground					26 926.3	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					26 927.34	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	3, 1, 2← 3, 0, 3	Ground	3/2		5/2		26 928.	1.
C ¹² H ₅ O ¹⁶ H	3-1051	10, 4, 7←10, 3, 8	Ground					26 932.8	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	11, 3←12, 2	Ground					26 934.0	
C ¹² DHDC ¹² HDF ¹⁹	3- 561	3, 0, 3← 2, 1, 2	Ground					26 935.4	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	3, 0, 3← 2, 1, 2	Ground					26 935.69	
C ¹² D ₃ C ¹² :C ¹² D	4-1046	2, 1← 1, 1	Ground					26 936.87	.10
C ¹² D ₃ C ¹² :C ¹² D	4-1046	2, 0← 1, 0	Ground					26 937.24	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 937.28	
DN ¹⁴ O ₃ ¹⁶	3- 32	9, 6, 3← 9, 6, 2	Ground					26 938.68	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	3, 0, 3← 2, 1, 2	Ground					26 940.54	
t-DHC ¹² :C ¹² HF ¹⁹	4- 788	6, 1, 5← 6, 1, 6	Ground					26 942.9	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	11, 3←12, 2	Ground					26 945.4	
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	6, 0, ← 5, 0,	Ground					26 945.74	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					26 947.0	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 950.5	
Na ²³ Br ⁷⁹	1-	3← 2	Excited	7/2		5/2		26 952.98	.10
Na ²³ Br ⁷⁹	1-	3← 2	Excited	9/2		7/2		26 952.98	.10
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	6, 2, ← 5, 2,	Ground					26 953.3	.5
Na ²³ Br ⁷⁹	1-	3← 2	Excited	5/2		3/2		26 956.30	.30
Na ²³ Br ⁷⁹	1-	3← 2	Excited	3/2		1/2		26 956.30	.30
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	6, 4, ← 5, 4,	Ground					26 956.48	.5
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	6, 3, ← 5, 3,	Ground					26 956.48	.5
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	6, 5, ← 5, 5,	Ground					26 957.60	.5
C ¹² H ₅ F ¹⁹	4-1281	6, 1, 5← 5, 1, 4	Ground					26 960.2	.1
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	6, 2, ← 5, 2,	Ground					26 961.1	.5
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 2, 6← 9, 1, 9	Ground	9		10		26 961.70	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 2, 6← 9, 1, 9	Ground	7		8		26 961.70	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	8, 2, 6← 9, 1, 9	Ground	8		9		26 963.42	.10
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	3, 0, 3← 2, 1, 2	Ground					26 965.09	
c-C ¹² *H ₂ C ¹² HDC ¹² *HC ¹² N ¹⁴	4-1172	4, 1, 3← 3, 1, 2	Ground					26 969.51	.1
C ¹² H ₂ :C ¹² HC ¹² N ¹⁵	4-1025	3, 1, 3← 2, 1, 2	Ground					26 969.6	.15
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	9, 3, 7← 9, 3, 6	Ground					26 973.2	.2
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 772	6, 1, 6← 5, 1, 5	Ground					26 976.65	.2
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	9, 8, 2← 9, 6, 3	Ground					26 977.9	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	8, 4, 4← 8, 4, 5	Ground					26 977.99	.2
C ¹³ H ₃ O ¹⁶ H	3- 213	13, , ←12, ,	Ground					26 979.03	.1
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	8, 4, 4← 8, 4, 5	Ground					26 980.24	.2
C ¹³ H ₃ O ¹⁶ H	3- 213	13, , ←12, ,	Ground					26 980.40	.1
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	9, 8, 2← 9, 6, 3	Ground					26 983.1	
C ¹² H ₅ O ¹⁶ H	3-1051	7, 1, 7← 6, 1, 6	Ground					26 985.21	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	4, 0, 4← 3, 0, 3	Ground					26 985.78	.05
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	8, 5, 3← 8, 5, 4	Ground					26 985.8	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	5, 1, 4← 5, 0, 5	Ground					26 988.70	.1
H ₂ C ¹² :C ¹² F ¹⁹	4- 681	2, 0, 2← 1, 0, 1	Ground					26 991.7	.3
C ¹² D ₃ C ¹² :C ¹² C ¹³ F ¹⁹	3- 896	11, ←10,	Ground					26 992.0	.5
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						26 992.78	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 992.83	
C ¹² H ₃ Si ²⁸ DF ¹⁹ -E	3- 198	7, 2, 6← 7, 2, 5	Ground					26 993.5	
C ¹² H ₃ S ³² H	3- 221	5, 0, ← 4, 1,	Ground					26 994.2	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						26 995.23	
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						26 995.60	.05
C ¹² H ₃ Si ²⁸ DF ¹⁹ -A	3- 197	7, 2, 6← 7, 2, 5	Ground					26 996.8	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	11, 2, 9←11, 2,10	Ground	12		12		26 999.14	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	11, 2, 9←11, 2,10	Ground	10		10		26 999.14	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	11, 2, 9←11, 2,10	Ground	11		11		27 000.07	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	4, 2, 3← 3, 2, 2	Ground					27 003.61	.05
D ₂ O ¹⁶	3- 42	Not Reported						27 005.	
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	3, 3, 0← 3, 2, 1	Ground					27 008.50	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	4, 3, 2← 3, 3, 1	Ground					27 008.78	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	4, 3, 1← 3, 3, 0	Ground					27 008.78	.05
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 3← 5, 2, 4	Ground	7/2		7/2		27 010.3	
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	8, 1, 7← 8, 0, 8	Ground					27 011.07	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 3← 5, 2, 4	Ground	13/2		13/2		27 011.9	
H ₂ C ¹² :C ¹² F ¹⁹	4- 681	4, 3, 2← 4, 1, 3	Ground					27 014.7	.3
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 3← 5, 2, 4	Ground	9/2		9/2		27 016.2	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	5, 3, 3← 5, 2, 4	Ground	11/2		11/2		27 017.7	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	4, 2, 2← 3, 2, 1	Ground					27 022.79	.05
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 1, 9←10, 0,10	Ground	17/2		17/2		27 027.28	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						27 027.4	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 1, 9←10, 0,10	Ground	23/2		23/2		27 028.20	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 1, 9←10, 0,10	Ground					27 031.04	.2
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	18,16, 3←18,14, 4	Ground					27 033.0	.1
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 1, 9←10, 0,10	Ground	19/2		19/2		27 033.77	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	10, 1, 9←10, 0,10	Ground	21/2		21/2		27 034.75	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 036.	5.
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	3, 1, 3← 4, 0, 4	Ground					27 039.67	.02
C ¹² D ₃ C ¹² :C ¹² C ¹² F ¹⁹	3- 892	11, ←10,	Ground					27 041.8	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	6, 0, 6← 5, 1, 5	Ground	9/2		7/2		27 041.92	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	6, 0, 6← 5, 1, 5	Ground	15/2		13/2		27 041.92	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	4, 0, 4← 3, 1, 3	Ground	7/2	5/2			27 044.25	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	4, 0, 4← 3, 1, 3	Ground	9/2	7/2			27 044.25	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	4, 0, 4← 3, 1, 3	Ground	7/2	5/2			27 044.25	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	4, 0, 4← 3, 1, 3	Ground	9/2	7/2			27 044.25	.2
C ¹³ H ₂ :C ¹² HC ¹² N ¹⁴	4-1022	3, 1, 3← 2, 1, 2	Ground					27 046.5	.15
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	5/2	3/2			27 046.88	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	11/2	9/2			27 046.88	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	5/2	3/2			27 046.88	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	11/2	9/2			27 046.88	.2
C ¹³ H ₃ O ¹⁶ H	3- 213	3, 2, ← 3, 1,	Ground					27 047.19	.1
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁸¹	4- 44	4, 0, 4← 3, 0, 3	Ground	11/2	9/2			27 049.0	
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁸¹	4- 44	4, 0, 4← 3, 0, 3	Ground	9/2	7/2			27 049.0	
C ¹³ H ₃ O ¹⁶ H	3- 213	4, 2, ← 4, 1,	Ground					27 050.45	.1
P ³¹ O ¹⁶ Cl ₃ ³⁷	4-1512	7, ← 6,	Ground					27 052.0	.5
C ¹³ H ₃ O ¹⁶ H	3- 213	2, 2, ← 2, 1,	Ground					27 052.97	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	6, 0, 6← 5, 1, 5	Ground	13/2	11/2			27 053.88	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	6, 0, 6← 5, 1, 5	Ground	11/2	9/2			27 053.88	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 1, 2	Ground					27 056.70	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	10, 2, 8←10, 2, 9	Ground					27 060.92	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 1, 2	Ground					27 061.01	.1
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	10, 2, 8←10, 2, 9	Ground					27 062.30	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 069.	5.
C ¹³ H ₃ O ¹⁶ H	3- 213	5, 2, ← 5, 1,	Ground					27 072.17	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					27 072.7	.1
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	1, 1, 1← 0, 0, 0	Ground					27 077.01	
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 0, 3← 2, 0, 2	Excited					27 077.49	.15
HC ¹³ :C ¹² C ¹² HO ¹⁶	4- 912	3, 0, 3← 2, 0, 2	Ground					27 078.64	.02
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 083.	5.
HC ¹³ :C ¹² C ¹² HO ¹⁶	4- 912	3, 2, 2← 2, 2, 1	Ground					27 086.60	.02
4d-C ₆ ¹² H ₅ F ¹⁹	4-1283	6, 2, 4← 5, 2, 3	Ground					27 088.5	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported						27 088.7	
C ¹² DHC ₃ ³⁵	4- 344	6, 1, 5← 6, 0, 6	Ground					27 090.	5.
HC ¹³ :C ¹² C ¹² HO ¹⁶	4- 912	3, 2, 1← 2, 2, 0	Ground					27 090.94	.02
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 4, 0, 4	Ground	3/2	3/2			27 092.56	.05
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	1, 1, 0← 1, 0, 1	Ground					27 092.7	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 4, 0, 4	Ground	5/2	5/2			27 096.	
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	7, 1, 7← 6, 1, 6	Ground					27 097.02	
Tl ²⁰⁵ Cl ³⁵	1-	5← 4	Excited					27 102.42	0.10
C ¹³ H ₃ O ¹⁶ H	3- 213	13, , ←12, ,	Ground					27 104.80	.1
C ¹³ H ₃ O ¹⁶ H	3- 213	13, , ←12, ,	Ground					27 105.93	.1
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Excited					27 110.	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 4, 0, 4	Ground	13/2	13/2			27 110.00	.05
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	4, 0, 4← 3, 0, 3	Ground					27 110.93	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						27 112.0	.3
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	5, 1, 4← 5, 1, 5	Ground					27 113.5	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₂ HC ¹² HDF ¹⁹	3- 563	3, 0, 3← 2, 1, 2	Ground					27 116.9	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 1, 2	Ground					27 119.10	.1
N ¹⁵ S ³² F ₃ ¹⁹	4-1664	3, ← 2,	Ground					27 121.49	
C ¹³ H ₃ O ¹⁶ H	3- 213	6, 2, ← 6, 1,	Ground					27 122.76	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 4, 0, 4	Ground		5/2	5/2		27 126.	1.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					27 127.45	.1
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	8, 3, 5← 8, 3, 6	Ground					27 132.7	.05
C ¹² H ₃ C ¹³ :C ¹² C ¹² F ₃ ¹⁹	3- 894	10, ← 9,	Ground					27 135.0	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					27 138.22	.1
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						27 138.5	1.
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited		11/2	9/2		27 140.35	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited			9/2	7/2	27 140.35	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited			7/2	5/2	27 140.35	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited			13/2	11/2	27 140.35	0.10
D ₂ O ₂ ¹⁶	3- 42	Not Reported						27 141.	3.
a-C ¹² H ₂ DC ¹² H ₂ C ¹² H ₃	3- 786	5, 1, 4← 5, 0, 5	Ground					27 141.90	.06
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	3, 1, 2← 2, 1, 1	Ground					27 144.7	.1
N ¹⁴ O ₂ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Excited					27 145.	
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						27 150.0	20.
D ₂ O ₂ ¹⁶	3- 42	Not Reported						27 152.	3.
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	11, 4, 7←11, 3, 8	Ground					27 152.82	.2
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² C ¹² N ¹⁴	3-1023	5, 1, 5← 4, 1, 4	Ground					27 153.6	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					27 159.69	.1
g-C ¹² H ₂ Cl ³⁵ C ¹² H ₂ Cl ³⁵	3- 451	11, 1,10←11, 0,11						27 160.	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 4, 0, 4	Ground		7/2	7/2		27 161.	1.
C ₆ H ₅ F ¹⁹	4-1281	6, 3, 3← 5, 3, 2	Ground					27 163.3	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 164.	5.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 4, 0, 4	Ground		7/2	7/2		27 166.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 175.	5.
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					27 176.6	.2
HC ¹² :C ¹³ C ¹² N ¹⁴	4- 883	3← 2	Ground					27 179.10	
HC ¹² :C ¹² C ¹³ N ¹⁴	4- 884	3← 2	Ground					27 181.45	
S ³² *HC ¹² :C ¹² DC ¹² D:C ¹² *H	4-1164	12, 5, 8←12, 5, 7	Ground					27 185.0	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					27 186.05	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 188.	5.
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁷⁹	4- 43	4, 0, 4← 3, 0, 3	Ground		11/2	9/2		27 191.6	
H ₂ B ¹⁰ H ₂ B ¹¹ HBr ⁷⁹	4- 43	4, 0, 4← 3, 0, 3	Ground			9/2	7/2	27 191.6	
O ₃ ¹⁸	4-1845	18, 2,16←19, 1,19	Ground					27 192.	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 4, 0, 4	Ground		9/2	9/2		27 194.28	.05
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground		5/2	3	3/2 2	27 194.75	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					27 196.07	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	4, 1, 3← 4, 0, 4	Ground		11/2	11/2		27 196.26	.05
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					27 200.	20.
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground		5/2	2	3/2 1	27 202.64	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						27 204.33	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	5/2	4	3/2	3	27 204.99	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 1, 2← 1, 0, 1	Ground					27 205.64	.4
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						27 206.96	
C ¹² O ¹⁸ F ₂ ¹⁹	4- 213	4, 2, 2← 4, 2, 3	Ground					27 207.95	.10
I ¹²⁷ Cl ³⁵	1-	4← 3	Excited	13/2		11/2		27 208.54	
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	3, 0, 3← 2, 0, 2	Ground					27 212.71	.05
HC ¹² :C ¹² C ¹² HO ¹⁸	4- 915	3, 1, 2← 2, 1, 1	Ground					27 213.69	.05
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						27 214.44	
C ¹³ H ₃ O ¹⁶ H	3- 213	7, 2, ← 7, 1,	Ground					27 215.60	.1
DN ¹⁴ O ₃ ¹⁶	3- 32	4, 2, 2← 4, 2, 3	Ground					27 215.84	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	7/2	4	5/2	3	27 217.51	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						27 218.6	.3
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	7/2	3	5/2	2	27 221.02	
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited					27 221.30	0.10
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	8, 7, 2← 8, 5, 3	Ground					27 222.6	.1
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² C ¹² N ¹⁴	3-1023	5, 0, 5← 4, 0, 4	Ground					27 223.8	.1
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	7/2	5	5/2	4	27 225.32	
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	3, 2, 2← 2, 2, 1	Ground					27 226.03	.05
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					27 227.02	.1
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	7/2	2	5/2	1	27 228.34	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						27 231.02	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					27 235.8	.1
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	3, 2, 1← 2, 2, 0	Ground					27 237.09	.05
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² C ¹² N ¹⁴	3-1023	5, 2, 4← 4, 2, 3	Ground					27 238.6	.1
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					27 240.	20.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 1, 2	Ground					27 240.85	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					27 241.74	.1
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	3/2	2	1/2	1	27 242.59	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					27 244.4	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 245.	5.
C ¹² HD ₂ C ¹² HDF ¹⁹	3- 558	6, 1, 6← 5, 2, 3	Ground					27 245.5	.1
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					27 250.	20.
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	3/2	3	1/2	2	27 254.90	
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	6, 1, ← 5, 1,	Ground					27 257.39	.5
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited		7/2		5/2	27 260.18	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited		9/2		7/2	27 260.18	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited		13/2		11/2	27 260.18	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Excited		11/2		9/2	27 260.18	0.10
C ¹² HD(C ¹² N ¹⁴) ₂	4- 902	10, 1, 9←10, 0,10	Ground					27 261.51	
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	Not Reported	Ground					27 262.5	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 5, 1← 5, 4, 2	Excited					27 263.	2.
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	Not Reported	Ground					27 272.0	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					27 281.0	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						27 282.	3.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					27 283.29	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	9/2		9/2		27 283.66	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	9/2		7/2		27 283.66	
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	5, 1, 5← 4, 0, 4	Ground					27 285.5	.3
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	9/2		9/2		27 286.25	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	9/2		7/2		27 286.25	
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	4, ← 3,	Ground					27 287.8	.3
g-C ¹² H ₂ Cl ³⁵ C ¹² H ₂ Cl ³⁵	3- 451	5, 1, 5← 4, 0, 4						27 289.	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					27 290.	20.
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	9/2		9/2		27 292.63	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	9/2		7/2		27 292.63	
HC ¹² :C ¹² C ¹² N ¹⁴	4- 881	3← 2	Ground		3		3	27 293.09	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	10, 7, 3←10, 6, 4	Ground					27 293.4	.1
HC ¹² :C ¹² C ¹² N ¹⁴	4- 881	3← 2	Ground		4		3	27 294.47	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	9/2		7/2		27 295.05	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	9/2		9/2		27 295.05	
HC ¹² :C ¹² C ¹² N ¹⁴	4- 881	3← 2	Ground		2		2	27 296.29	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	5, 4, 2← 5, 2, 3	Ground					27 297.0	.3
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	9, 8, 2← 9, 6, 3	Ground					27 302.9	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 305.	5.
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² C ¹² N ¹⁴	3-1023	5, 1, 4← 4, 1, 3	Ground					27 306.5	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					27 309.6	.1
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	8, 1, 7← 8, 0, 8	Ground					27 319.22	
(C ¹² H ₃) ₃ C ¹² C ¹³ N ¹⁴	3-1024	5, ← 4,	Ground					27 321.6	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					27 323.13	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 3, 2← 5, 2, 3	Ground					27 324.1	.2
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					27 325.	20.
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	3, 2, 1← 2, 2, 0	Ground					27 325.5	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	4, 2, 3← 4, 1, 4	Excited					27 327.	2.
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 1, 2← 2, 1, 1	Ground					27 329.62	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	9, 8, 2← 9, 6, 3	Excited					27 332.3	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 333.	5.
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2	6	7/2	5	27 333.85	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2	6	9/2	5	27 333.85	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					27 333.9	.1
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	13/2	6	11/2	5	27 336.68	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	13/2	7	11/2	6	27 336.68	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	9, 8, 2← 9, 6, 3	Excited					27 337.0	.1
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	13/2	5	11/2	4	27 337.38	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	13/2	8	11/2	7	27 337.38	
HC ¹² :C ¹² C ¹³ HO ¹⁶	4- 914	3, 1, 3← 2, 1, 2	Ground					27 338.45	.02
Tl ²⁰⁵ Cl ³⁵	1-	5← 4	Ground					27 340.51	0.10
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 2, 2← 2, 2, 1	Ground					27 340.69	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	9, 8, 2← 9, 6, 3	Excited					27 341.8	.1
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	5, 1, 4← 5, 0, 5	Ground		7/2		7/2	27 342.62	.05
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	5, 1, 4← 5, 0, 5	Ground		13/2		13/2	27 343.98	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F	Frequency MHz	Acc. ± MHz
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	3, 0, 3← 2, 0, 2	Ground		27 345.	1.0
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	9, 8, 2← 9, 6, 3	Excited		27 345.0	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			27 346.	5.
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2 4 7/2 3	27 346.31	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2 4 9/2 3	27 346.31	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	5, 1, 4← 5, 0, 5	Ground	9/2 9/2	27 347.22	.05
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	5, 1, 4← 5, 0, 5	Ground	11/2 11/2	27 348.50	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			27 350.	5.
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2 5 9/2 4	27 354.71	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2 5 7/2 4	27 354.71	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2 7 9/2 6	27 356.58	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2 6 7/2 5	27 357.73	
I ¹²⁷ Cl ³⁵	1-	4← 3	Ground	11/2 6 9/2 5	27 357.73	
HC ¹² :C ¹³ C ¹² HO ¹⁶	4- 913	3, 1, 3← 2, 1, 2	Ground		27 358.89	.02
C ¹² *H ₂ C ¹² H ₂ C ¹² *HC ¹² N ¹⁴	4-1171	4, 1, 3← 3, 1, 2	Ground		27 358.91	.05
C ¹³ H ₃ O ¹⁶ H	3- 213	8, 2, ← 8, 1,	Ground		27 364.12	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		27 364.5	.1
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	3, 2, 2← 2, 2, 1	Ground		27 365.	1.0
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Ground	7/2 5/2	27 365.61	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Ground	5/2 5/2	27 366.1	
a-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 597	2, 1, 1← 2, 0, 2	Ground		27 367.7	.2
HN ¹⁴ O ₃ ¹⁶	3- 31	6, 4, 2← 6, 4, 3	Ground		27 369.67	
C ¹² H ₃ C ¹² HDC ¹² H ₃	3- 784	5, 1, 4← 5, 0, 5	Ground		27 370.09	.06
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 2, 2← 2, 2, 1	Excited		27 370.21	.10
HDO ₂ ¹⁶	3- 43	17, , ←17, ,			27 375.	3.
Tl ²⁰³ Cl ³⁵	1-	5← 4	Ground	11/2 11/2	27 376.62	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Ground	7/2 5/2	27 379.49	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Ground	9/2 7/2	27 379.49	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Ground	13/2 11/2	27 379.49	0.10
Tl ²⁰³ Cl ³⁵	1-	5← 4	Ground	11/2 9/2	27 379.49	0.10
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	3, 2, 1← 2, 2, 0	Ground		27 382.	1.0
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Ground	5/2 3/2	27 382.73	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	5, 0, 5← 4, 1, 4	Ground		27 382.99	.05
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Ground	3/2 3/2	27 383.8	
C ¹² O ¹⁶ Cl ³⁵ Cl ³⁷	4- 182	6, 3, 4← 6, 2, 5	Ground		27 387.0	.3
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Ground	7/2 7/2	27 388.8	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Ground	9/2 7/2	27 389.88	
HDS ³⁴	4-1729	7, 4, 3← 7, 4, 4	Ground		27 392.00	
C ¹² H ₃ C ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 891	10, ← 9,	Ground		27 393.6	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	2, 1, 2← 1, 0, 1	Ground		27 394.12	.4
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 2, 2← 2, 2, 1	Excited		27 399.95	.20
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			27 401.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		27 402.2	.1
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	3, 1, 2← 2, 2, 1	Ground		27 403.5	
HDO ₂ ¹⁶	3- 43	17, , ←17, ,			27 406.	3.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ O ₂ Cl ³⁵	4-1461	3, 2, 1← 2, 2, 0	Ground		3/2		1/2	27 407.00	
N ¹⁴ O ₂ F ¹⁹	4-1581	4, 2, 3← 4, 2, 2	Ground					27 409.7	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					27 419.4	.1
C ¹² H ₃ C ¹² H ₂ C ¹³ N ¹⁴	3- 732	3, 1, 2← 2, 1, 1	Ground					27 421.62	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 6, ← 8, 5,	Ground					27 428.17	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 6, ← 8, 5,	Ground					27 428.52	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 6, ← 8, 5,	Ground					27 429.04	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	1, 0, 1← 1, 1, 0	Ground					27 430.55	.4
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Excited		5/2		5/2	27 430.70	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Excited		5/2		5/2	27 432.46	
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 1, 2← 2, 1, 1	Ground					27 432.89	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					27 432.92	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	14, 2, 13←13, 3, 11	Ground					27 435.8	.1
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	12, 8, 4←12, 7, 5	Ground					27 442.8	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					27 444.5	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	10, 7, 3←10, 6, 4	Ground					27 444.98	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						27 445.4	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					27 445.47	.1
C ¹² HBr ₃ ⁷⁹	4- 241	11, ←10,	Ground					27 447.9	.5
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 5, 1← 5, 4, 2	Excited					27 450.	2.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					27 450.	
O ¹⁶ O ¹⁶ O ¹⁶	4-1847	Not Reported						27 458.	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	1, 0, 1← 1, 1, 0	Ground					27 459.13	.2
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					27 461.1	.2
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	15, 6, 9←15, 5, 11	Ground					27 461.3	.3
s-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D-A	3- 505	5, 1, 4← 5, 0, 5	Ground					27 466.07	.2
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					27 470.	2.0
C ¹² H ₃ O ¹⁶ H	3- 211	25, 2, ←25, 1,	Ground					27 470.99	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						27 472.5	.5
C ¹² H ₃ O ¹⁶ H	3- 211	13, 2, ←13, 1,	Ground					27 472.54	.1
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	9, 1, 8← 9, 0, 9	Ground					27 473.	5.
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁴	3-1021	5, 1← 4, 1	Ground					27 474.9	.1
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	6, 3, 4← 6, 2, 5	Ground					27 476.1	.3
N ¹⁴ H ₃	4-1771	9, 9← 9, 9	Ground					27 478.00	.10
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	4, 1, 3← 4, 0, 4	Ground					27 478.5	.5
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁴	3-1021	5, ← 4,	Ground					27 484.2	.1
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 1, 3← 2, 1, 2	Ground					27 487.48	.02
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	3, 1, 2← 2, 1, 1	Ground					27 487.70	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 548	Not Reported						27 487.81	.05
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁴	3-1021	5, ← 4,	Ground					27 488.4	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 548	Not Reported						27 489.56	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 548	Not Reported						27 492.74	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground		7/2		5/2	27 492.96	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground		9/2		7/2	27 492.96	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground		9/2		7/2	27 493.69	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	7/2	5/2			27 493.69	.2
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						27 494.32	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	11/2	9/2			27 495.40	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	5/2	3/2			27 495.40	.2
O ¹⁶ F ₂ ¹⁹	4-1611	9, 3, 7←10, 2, 8	Ground					27 495.80	.10
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	5/2	3/2			27 496.12	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	4, 0, 4← 3, 1, 3	Ground	11/2	9/2			27 496.12	.2
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	11, 1, 10←10, 2, 9	Ground					27 498.50	.1
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁴	3-1021	5, ← 4,	Ground					27 498.9	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	11, 1, 10←10, 2, 9	Ground					27 500.30	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Excited	13/2	13/2			27 501.	
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	16, 6, 10←16, 5, 12	Ground					27 501.8	.3
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Excited	13/2	13/2			27 502.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	15, 5, ←16, 4,	Ground					27 504.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					27 504.75	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 510.	5.
C ¹² D ₃ C ¹² F ₃ ¹⁹	3- 414	2, ← 1,	Ground					27 510.5	.2
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						27 515.68	
D ₂ N ¹⁵ C ¹² HO ¹⁶	3- 161	4, 0, 4← 3, 1, 3	Ground					27 516.69	
C ¹² H ₂ F ₂ ¹⁹	4- 351	23, 7, 17←24, 6, 18	Ground					27 516.98	.10
C ¹² H ₃ Sn ¹²⁰ H ₃	3- 345	2, ← 1,	Ground					27 517.58	.10
Tl ²⁰⁵ I ¹²⁷	1-	17←16	Excited					27 520.39	0.20
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁴	3-1021	5, ← 4,	Excited					27 521.5	.1
c-HF ¹⁹ C ¹² :C ¹³ HF ¹⁹	4- 692	5, 1, 4← 5, 0, 5	Ground					27 524.86	.05
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	7, 4, 3← 7, 3, 4	Ground					27 525.60	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						27 526.04	
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	14, 6, 8←14, 5, 10	Ground					27 526.5	.3
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Excited	11/2	11/2			27 528.10	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	40, 20, ←39, 21,	Ground					27 528.39	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	40, 20, ←39, 21,	Ground					27 528.84	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	40, 20, ←39, 21,	Ground					27 529.07	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Excited	11/2	11/2			27 529.56	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 530.	5.
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	5, 1, 5← 4, 1, 4	Ground					27 534.57	.2
(C ¹² H ₃) ₃ C ¹² C ¹² N ¹⁴	3-1021	5, 1← 4, 1	Excited					27 539.1	.1
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	3, ← 2,	Excited					27 539.39	.05
HC ¹³ :C ¹² C ¹² HO ¹⁶	4- 912	3, 1, 2← 2, 1, 1	Ground					27 543.73	.02
C ¹² H ₃ C ¹² HO ¹⁸	3- 479	7, 1, 6← 7, 1, 7	Ground					27 547.7	.5
(C ¹³ H ₃)(C ¹² H ₃)O ¹⁶	3- 594	3, 0, 3← 2, 1, 2	Ground					27 548.3	.5
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	11, 7, 4←11, 6, 5	Ground					27 549.4	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					27 553.24	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 555.	5.
HC ¹³ HO ¹⁶	4- 382	3, 1, 2← 3, 1, 3	Ground					27 555.73	
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	3, 1, 2← 3, 0, 3	Ground	3/2	3/2			27 557.89	.05
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	2, ← 1,	Ground					27 558.79	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ F ₃ ¹⁹ D	4-1642	2, ← 1,	Ground					27 560.17	.1
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		27 560.62	.05
C ¹² H ₃ Sn ¹²⁰ H ₃	3- 345	2, ← 1,	Ground					27 560.69	.10
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 2← 2, 1, 1	Ground					27 561.71	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	5/2		5/2		27 562.46	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 2← 2, 1, 1	Ground					27 562.9	.2
C ¹² D ₃ C ¹² F ₃ ¹⁹	3- 414	2, ← 1,	Ground					27 563.0	.2
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	3, 1, 2← 3, 0, 3	Ground	5/2		5/2		27 563.76	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	5/2		5/2		27 565.	
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	3, ← 2,	Ground					27 565.42	.05
HDS ³²	4-1727	7, 4, 3← 7, 4, 4	Ground					27 566.31	.05
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	3, 1, 2← 3, 0, 3	Ground	7/2		7/2		27 566.63	.05
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 1, 3← 2, 1, 2	Excited					27 570.57	.15
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	16, 7, ←15, 8,	Ground					27 575.98	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 2← 2, 1, 1	Excited					27 576.62	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	16, 7, ←15, 8,	Ground					27 576.76	.1
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 1, 3← 2, 1, 2	Excited					27 578.10	.15
C ¹² H ₃ Sn ¹¹⁹ H ₃	3- 344	2, ← 1,	Ground					27 580.52	.10
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 771	6, 1, 6← 5, 1, 5	Ground					27 580.96	.2
C ¹³ H ₃ O ¹⁶ H	3- 213	9, 2, ← 9, 1,	Ground					27 581.65	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	6, 5, 2← 6, 3, 3	Excited					27 582.45	.1
Tl ²⁰⁵ I ¹²⁷	1-	17←16	Excited					27 588.22	0.20
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	3, 1, 2← 2, 1, 1	Excited					27 592.2	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	9/2		9/2		27 593.5	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	15/2		15/2		27 595.	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	7/2		7/2		27 596.	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	7/2		7/2		27 596.0	1.
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 772	6, 1, 5← 5, 1, 4	Ground					27 596.50	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	15/2		15/2		27 597.48	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	15/2		15/2		27 597.48	.05
C ¹² D ₃ C ¹² F ₃ ¹⁹	3- 414	2, ← 1,	Ground					27 597.5	.2
C ¹² *H ₂ C ¹² H:C ¹² *H	4-1031	7, 4, 3← 7, 4, 4	Ground					27 599.8	
C ¹² H ₃ Sn ¹¹⁸ H ₃	3- 341	2, ← 1,	Ground					27 600.80	.10
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	11, 8, 4←11, 7, 5	Ground					27 603.	
C ¹² H ₂ F ₂ ¹⁹	4- 351	23, 7,16←24, 6,19	Ground					27 603.66	.10
C ¹² H ₂ :C ¹³ HC ¹² N ¹⁴	4-1023	3, 1, 3← 2, 1, 2	Ground					27 605.5	.15
C ¹² H ₂ :C ¹² HC ¹² N ¹⁵	4-1025	3, 0, 3← 2, 0, 2	Ground					27 607.3	.15
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	11, 1,10←10, 2, 9	Ground					27 608.	
Re ^b O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1593	4, 1, 4← 3, 1, 3	Ground					27 608.25	.20
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	5, 1, 5← 4, 1, 4	Ground					27 609.21	.2
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 3, 3← 5, 2, 4	Excited					27 613.	2.
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	3, 1, 2← 3, 0, 3	Ground					27 615.1	.1
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	7, 4, 3← 7, 4, 4	Ground					27 618.3	.1
C ¹² H ₃ Sn ¹¹⁷ H ₃	3- 343	2, ← 1,	Ground					27 621.20	.10
C ¹² H ₂ :C ¹² HC ¹² N ¹⁵	4-1025	3, 2, 2← 2, 2, 1	Ground					27 622.4	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
Tl ²⁰³ I ¹²⁷	1-	17←16	Excited					27 624.02	0.20
C ¹³ H ₃ C ¹² H ₂ F ¹⁹	3- 556	2, 2, 1← 3, 1, 2	Ground					27 624.6	.1
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	10, 6, 4←10, 5, 5	Ground					27 625.2	
C ¹² H ₃ B ¹⁰ F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					27 625.8	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	Not Reported	Excited					27 626.49	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 2, 2, 1	Ground					27 629.5	.5
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	3, 0, 3← 2, 1, 2	Ground					27 630.0	.1
C ¹² *DHC ¹² H:C ¹² *H	4-1034	6, 3, 3← 6, 3, 4	Ground					27 632.7	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁵	4-1025	3, 2, 1← 2, 2, 0	Ground					27 634.4	.15
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	7, 1, 6← 7, 1, 7	Ground					27 634.90	.5
C ¹² D ₃ C ¹² F ₃ ¹⁹	3- 414	3, ← 2,	Ground					27 635.9	.2
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	10, 1,10← 9, 1, 9	Ground					27 637.7	.3
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	13/2		13/2		27 638.	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	13/2		13/2		27 639.18	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	13/2		13/2		27 639.18	.05
H ₂ O ₂ ¹⁶	3- 41	Not Reported						27 639.6	.2
C ¹² H ₃ Sn ¹¹⁶ H ₃	3- 342	2, ← 1,	Ground					27 641.99	.10
D ₂ O ₂ ¹⁶	3- 42	Not Reported						27 645.	3.
C ¹² H ₂ :C ¹² HC ¹³ N ¹⁴	4-1024	3, 1, 3← 2, 1, 2	Ground					27 646.6	.15
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	4, 1, 5← 4, 1, 4	Ground					27 648.4	.2
C ¹² *H ₂ C ¹² D:C ¹² *H	4-1032	10, 6, 4←10, 6, 5	Ground					27 649.2	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	10, 7, 4←10, 6, 5	Ground					27 651.	
C ¹² D ₃ Si ²⁸ DF ₂ ¹⁹	3- 199	3, 2, 1← 2, 2, 0	Ground					27 653.13	.1
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	7, 1, 6← 7, 1, 7	Ground					27 655.01	.2
Tl ²⁰⁵ I ¹²⁷	1-	17←16	Ground					27 655.37	0.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 656.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	6, 5, 2← 6, 3, 3	Ground					27 656.0	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	11/2		11/2		27 663.	
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	10, 7, 3←10, 7, 4	Ground					27 663.6	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	11/2		11/2		27 664.54	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 5, 0, 5	Ground	11/2		11/2		27 664.54	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 669.	5.
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	14, 1,13←14, 1,14	Ground					27 676.0	.5
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	14, 1,13←14, 1,14	Ground					27 678.6	.5
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	9, 5, 4← 9, 4, 5	Ground					27 680.	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	2, 2, 0← 1, 1, 1	Ground					27 680.	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						27 680.4	.3
D ₂ O ₂ ¹⁶	3- 42	Not Reported						27 681.	3.
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	3, 0, 3← 2, 1, 2	Ground					27 683.8	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	11, 6, 6←11, 6, 5	Ground					27 688.80	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					27 688.9	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	9, 6, 4← 9, 5, 5	Ground					27 689.7	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	11, 6, 6←11, 6, 5	Ground					27 690.15	
Tl ²⁰³ I ¹²⁷	1-	17←16	Excited					27 692.01	0.40
C ¹³ H ₂ :C ¹² HC ¹² N ¹⁴	4-1022	3, 0, 3← 2, 0, 2	Ground					27 693.9	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					27 700.1	.1
Re ^b O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1593	4, 0, 4← 3, 0, 3	Ground					27 702.56	.20
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					27 707.3	.1
C ¹³ H ₂ :C ¹² HC ¹² N ¹⁴	4-1022	3, 2, 2← 2, 2, 1	Ground					27 709.5	.15
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	7, 1, 6← 6, 2, 5	Ground					27 711.27	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 712.	5.
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	8, 4, 4← 8, 3, 5	Ground					27 714.5	
g-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 553	3, 0, 3← 2, 1, 2	Ground					27 717.5	.1
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	8, 5, 4← 8, 4, 5	Ground					27 719.9	
C ¹² H ₃ P ³¹ H ₂	3- 271	14, 2,12←13, 3,10	Ground					27 720.4	.1
C ¹³ H ₂ :C ¹² HC ¹² N ¹⁴	4-1022	3, 2, 1← 2, 2, 0	Ground					27 722.0	.15
F ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	17, 6,11←17, 5,13	Ground					27 723.1	.3
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						27 725.0	20.
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	3, 1, 2← 3, 0, 3	Ground	3/2		3/2		27 726.70	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		27 728.65	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	3, 1, 2← 3, 0, 3	Ground	5/2		5/2		27 730.75	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	3, 1, 2← 3, 0, 3	Ground	7/2		7/2		27 733.35	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 1, 2← 3, 0, 3	Ground	3/2		3/2		27 734.22	.05
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	8, 1, 7← 8, 1, 8	Ground					27 736.32	.4
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 1, 2← 3, 0, 3	Ground	9/2		9/2		27 737.03	.05
C ¹² H ₃ P ³¹ H ₂	3- 271	14, 2,13←13, 3,11	Ground					27 737.9	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 738.	5.
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 1, 2← 3, 0, 3	Ground	5/2		5/2		27 740.18	.05
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	7, 4, 4← 7, 3, 5	Ground					27 741.1	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	7, 3, 4← 7, 2, 5	Ground					27 741.1	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 3, 3← 5, 2, 4	Excited					27 741.2	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 1, 2← 3, 0, 3	Ground	7/2		7/2		27 742.95	.05
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	5, 1, 4← 5, 0, 5	Ground					27 750.08	.05
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	12, 2,10←12, 2,11						27 758.05	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	15, 5, ←16, 4,	Ground					27 758.40	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	4, 2, 3← 4, 1, 4	Ground					27 758.8	.1
Tl ²⁰³ I ¹²⁷	1-	17←16	Ground					27 760.25	0.30
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	5, 2, 4← 5, 1, 5	Ground					27 761.	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	4, 0, 4← 3, 1, 3	Ground					27 761.0	
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	4, 1, 4← 3, 0, 3	Ground					27 761.0	
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	8, 1, 7← 8, 1, 8	Ground					27 762.42	.2
C ¹² O ¹⁶ Cl ₂ ³⁵	4- 181	5, 1, 5← 4, 0, 4	Ground					27 764.0	.3
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 3, 2← 5, 2, 3	Ground					27 766.71	.03
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	3, 1, 3← 2, 1, 2	Ground					27 767.31	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	1, 1, 0← 1, 0, 1	Ground					27 767.7	
N ¹⁴ H ₃	4-1771	14,13←14,13	Ground					27 772.52	.10
C ¹² H ₃ C ¹² HDF ¹⁹	3- 552	5, 1, 4← 4, 2, 3	Ground					27 773.2	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						27 773.33	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	1, 1, 0← 1, 0, 1	Ground					27 774.33	
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 4← 4, 4	Ground					27 778.32	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 3← 4, 3	Ground					27 778.76	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 2← 4, 2	Ground					27 779.14	.10
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						27 781.00	.1
N ¹⁴ S ³⁴ F ₃ ¹⁹	4-1663	3, ← 2,	Ground					27 782.10	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 785.	5.
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁵	3- 441	3, 1, 3← 2, 0, 2	Ground					27 786.4	.1
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 3← 5, 1, 4	Ground					27 787.09	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 3← 5, 1, 4	Ground					27 787.63	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 3← 5, 1, 4	Ground					27 788.17	.05
3d-C ¹² H ₅ F ¹⁹	4-1282	6, 2, 4← 5, 2, 3	Ground					27 798.1	.1
N ¹⁴ S ³³ F ₃ ¹⁹	4-1662	3, ← 2,	Ground					27 799.71	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					27 804.	2.0
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					27 804.7	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	1, 1, 0← 1, 0, 1	Ground					27 809.78	
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	4, 0, 4← 3, 1, 3	Ground		9/2	7/2		27 813.90	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	4, 0, 4← 3, 1, 3	Ground		7/2	5/2		27 813.90	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	4, 0, 4← 3, 1, 3	Ground		9/2	7/2		27 813.90	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	4, 0, 4← 3, 1, 3	Ground		7/2	5/2		27 813.90	.2
C ¹² D ₃ N ¹⁴ H ₂	3- 263	3, , ← 2, ,						27 815.0	.5
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					27 816.	2.0
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	4, 0, 4← 3, 1, 3	Ground		5/2	3/2		27 816.80	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	4, 0, 4← 3, 1, 3	Ground		11/2	9/2		27 816.80	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	4, 0, 4← 3, 1, 3	Ground		5/2	3/2		27 816.80	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 367	4, 0, 4← 3, 1, 3	Ground		11/2	9/2		27 816.80	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					27 817.50	.1
N ¹⁴ S ³² F ₃ ¹⁹	4-1661	3, ← 2,	Ground					27 817.67	
C ¹² H ₃ P ³¹ H ₂	3- 271	9, 1, 9← 8, 2, 7	Ground					27 819.0	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					27 820.87	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	6, 5, 2← 6, 3, 3	Ground					27 821.2	.3
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² F ¹⁹	3- 982	3, 2, 1← 2, 1, 1	Ground					27 824.92	.03
D ₂ O ₂ ¹⁶	3- 42	Not Reported						27 830.	3.
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 1, 2← 3, 0, 3	Ground		3/2	3/2		27 830.10	.05
C ¹³ HCl ³⁵ F ₂ ¹⁹	4- 253	4, 3, 2← 4, 2, 2	Ground					27 830.2	.3
HC ¹² :C ¹² C ¹³ HO ¹⁶	4- 914	3, 0, 3← 2, 0, 2	Ground					27 831.02	.02
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 832.	5.
(C ¹² H ₃) ₂ S ³²	3- 601	4, 2, 2← 4, 1, 3	Ground					27 832.08	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 2, 2← 4, 1, 3	Ground					27 832.63	.05
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 1, 2← 3, 0, 3	Ground		9/2	9/2		27 832.83	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 2, 2← 4, 1, 3	Ground					27 833.20	.05
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 1, 2← 3, 0, 3	Ground		5/2	5/2		27 835.97	.05
C ¹² O ¹⁸ F ₂ ¹⁹	4- 213	2, 1, 2← 1, 1, 1	Ground					27 838.50	.10
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 1, 2← 3, 0, 3	Ground		7/2	7/2		27 838.62	.05
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						27 839.05	
HC ¹² :C ¹² C ¹³ HO ¹⁶	4- 914	3, 2, 2← 2, 2, 1	Ground					27 839.37	.02

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹² :C ¹³ C ¹² HO ¹⁶	4- 913	3, 0, 3← 2, 0, 2	Ground					27 839.50	.02
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					27 842.7	.1
HC ¹² :C ¹² C ¹³ HO ¹⁶	4- 914	3, 2, 1← 2, 2, 0	Ground					27 844.65	.02
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² F ¹⁹	3- 982	3, 1, 2← 2, 0, 2	Ground					27 844.69	.03
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	3, 1, 2← 2, 1, 1	Ground					27 845.35	.05
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 3, 3← 5, 2, 4	Excited					27 847.3	.1
HC ¹² :C ¹³ C ¹² HO ¹⁶	4- 913	3, 2, 2← 2, 2, 1	Ground					27 847.98	.02
C ¹² D ₂ Cl ₃ ³⁵	4- 346	9, 1, 8← 9, 0, 9	Ground					27 850.	5.
S ³² *HC ¹² :C ¹² DC ¹² H:C ¹² *H	4-1163	10, 4, 7←10, 4, 6	Ground					27 851.2	.1
HC ¹² :C ¹³ C ¹² HO ¹⁶	4- 913	3, 2, 1← 2, 2, 0	Ground					27 852.84	.02
Re ^b O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1593	4, 2, 3← 3, 2, 2	Ground					27 858.61	.20
O ₃ ¹⁶	4-1841	41, 5,37←40, 6,34	Ground					27 862.	
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	18, 2,16←19, 1,19	Ground					27 862.	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						27 863.	3.
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D	3- 506	5, 1, 4← 5, 0, 5	Ground					27 864.67	.2
S ₂ ³² O ¹⁶	4-1821	3, 1, 3← 2, 1, 2	Ground					27 867.0	
a-HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₂ D	3- 506	5, 1, 4← 5, 0, 5	Ground					27 868.96	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						27 869.96	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	1, 1, 0← 1, 0, 1	Ground					27 870.71	
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	5, 3, 2← 6, 2, 5	Ground					27 874.3	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 875.	5.
C ¹³ H ₃ O ¹⁶ H	3- 213	10, 2, ←10, 1,	Ground					27 880.04	.1
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 5← 8, 5	Ground		21/2		19/2	27 890.79	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 4← 8, 4	Ground		15/2		13/2	27 894.38	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 0, ← 1, 0,	Ground					27 894.8	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	4, 0, 4← 3, 1, 3	Ground					27 896.28	.1
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 4← 8, 4	Ground		21/2		19/2	27 896.59	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 897.	5.
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	4, 0, 4← 3, 1, 3	Ground					27 897.37	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	4, 0, 4← 3, 1, 3	Ground					27 898.46	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						27 899.	3.
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 3← 8, 3	Ground		15/2		13/2	27 900.86	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 3← 8, 3	Ground		21/2		19/2	27 900.86	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 2← 8, 2	Ground		21/2		19/2	27 904.18	
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					27 904.3	.1
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 2← 8, 2	Ground		15/2		13/2	27 905.53	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	4, 3, 2← 4, 2, 2	Ground					27 906.05	.05
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 1← 8, 1	Ground		21/2		19/2	27 906.09	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 0← 8, 0	Ground		21/2		19/2	27 906.60	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 0← 8, 0	Ground		19/2		17/2	27 906.60	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 1← 8, 1	Ground		19/2		17/2	27 907.14	
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	5, 1, 4← 5, 0, 5	Excited					27 908.28	.05
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 2← 8, 2	Ground		19/2		17/2	27 908.37	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 1← 8, 1	Ground		15/2		13/2	27 908.37	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 0← 8, 0	Ground		17/2		15/2	27 909.17	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 2← 8, 2	Ground	15/2	13/2			27 909.17	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 1← 8, 1	Ground	17/2	15/2			27 909.17	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 2← 8, 2	Ground	17/2	15/2			27 910.00	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 3← 8, 3	Ground	19/2	17/2			27 910.92	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 3← 8, 3	Ground	17/2	15/2			27 910.92	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 2, 4← 6, 1, 5	Ground	5	6			27 911.82	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					27 911.9	.1
O ^b O ^b O ^b	4-1847	Not Reported						27 912.	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 4← 8, 4	Ground	17/2	15/2			27 912.39	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 2, 4← 6, 1, 5	Ground	6	5			27 913.06	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	5, 2, 4← 6, 1, 5	Ground	6	7			27 913.06	.10
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 5← 8, 5	Ground	17/2	15/2			27 914.35	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 4← 8, 4	Ground	19/2	17/2			27 914.35	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 6← 8, 6	Ground	17/2	15/2			27 916.40	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 0, ← 1, 0,	Ground					27 916.7	.2
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 5← 8, 5	Ground	19/2	17/2			27 918.60	
H ₃ C ¹² C ¹² :C ¹² Br ⁸¹	4- 942	9, 7← 8, 7	Ground	17/2	15/2			27 918.60	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						27 933.	5.
C ¹³ H ₃ C ¹² H ₂ F ¹⁹	3- 556	1, 1, 0← 1, 0, 1	Ground					27 935.2	.1
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	5, 1, 5← 4, 1, 4	Ground					27 936.00	
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	7, 1, 6← 7, 0, 7	Ground					27 943.	5.
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					27 944.	2.0
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² F ¹⁹	3- 982	3, 2, 2← 2, 1, 2	Ground					27 944.38	.03
O ^b O ^b O ^b	4-1847	Not Reported						27 949.	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	7, 3, 4← 7, 2, 5	Ground					27 960.91	.05
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 0, 3← 2, 0, 2	Ground					27 972.13	.02
C ¹² O ¹⁶ C ₂ ¹³⁵	4- 181	9, 4, 5← 9, 3, 6	Ground					27 977.6	.3
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					27 978.	2.0
C ¹² D ₂ HC ¹² :C ¹² C ¹² F ₃ ¹⁹	3- 897	11, , ←10, ,	Ground					27 980.8	.1
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 2, 2← 2, 2, 1	Ground					27 980.86	.02
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					27 982.7	.5
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 2, 1← 2, 2, 0	Ground					27 985.53	.02
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 0, ← 1, 0,	Ground					27 987.7	.2
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	6, 3, 3← 6, 3, 4	Ground					27 991.3	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	6, 5, 2← 6, 4, 3	Excited					27 993.	2.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					27 998.4	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 000.5	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					28 002.87	
a-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 204	3, 2, 2← 2, 2, 1	Ground					28 004.28	2.
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						28 006.22	.1
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						28 007.90	.1
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	10, 1, 9←10, 0,10	Ground					28 008.57	
B ₅ ¹¹ H ₉	4- 51	2, ← 1,	Ground					28 011.4	.1
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	3, 1, 2← 2, 1, 1	Ground					28 018.5	.05
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	3, 1, 2← 2, 1, 1	Ground					28 022.6	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					28 025.6	
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	5, 0, 5← 4, 0, 4	Ground					28 028.14	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	6, 3, 3← 6, 3, 4	Ground					28 029.77	.2
Re ^b O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1593	4, 2, 2← 3, 2, 1	Ground					28 030.30	.20
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 3, 2← 5, 2, 3	Ground					28 031.28	.03
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					28 032.7	.5
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	6, 3, 3← 6, 3, 4	Ground					28 035.49	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 037.5	.2
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 2, 1← 2, 2, 0	Ground					28 039.96	.1
C ¹² HD ₂ C ¹² :C ¹² D	4-1051	2, 1, 2← 1, 1, 1	Ground					28 042.28	.1
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 0, 3← 2, 0, 2	Excited					28 044.06	.15
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² F ¹⁹	3- 982	3, 3, 0← 2, 2, 0	Ground					28 044.08	.03
C ¹² D ₃ Ge ⁷⁶ H ₃	3- 308	2, 0← 1, 0	Ground					28 046.70	.10
S ³² P ³¹ Cl ₃ ³⁵	4-1531	10, ← 9,	Ground					28 053.1	.5
S ³⁴ *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1166	3, 2, 1← 2, 2, 0	Ground					28 054.2	.05
S ³² *DC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1162	3, 1, 2← 2, 1, 1	Ground					28 056.1	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	2, 2, 1← 2, 1, 2	Ground					28 058.34	.1
Re ^b O ₂ ¹⁶ O ¹⁸ F ¹⁹	4-1593	4, 1, 3← 3, 1, 2	Ground					28 059.01	.20
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 064.0	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	5, 3, 3← 5, 2, 4	Ground					28 065.3	.1
C ¹³ H ₃ I ¹²⁷	4- 483	2, 0← 1, 0	Ground		5/2		3/2	28 069.99	.08
Cl ₂ ^b O ¹⁶	4-1484	10, 2, 9←11, 1,10	Ground					28 072.16	
Cl ₂ ^b O ¹⁶	4-1484	10, 2, 9←11, 1,10	Ground					28 073.35	
Cl ₂ ^b O ¹⁶	4-1484	10, 2, 9←11, 1,10	Ground					28 076.76	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					28 078.2	.1
Cl ₂ ^b O ¹⁶	4-1484	10, 2, 9←11, 1,10	Ground					28 078.35	
Cl ₂ ^b O ¹⁶	4-1484	10, 2, 9←11, 1,10	Ground					28 078.56	
Cl ₂ ^b O ¹⁶	4-1484	10, 2, 9←11, 1,10	Ground					28 080.28	
t-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 554	1, 1, 0← 1, 0, 1	Ground					28 081.6	.1
C ¹² *HN ¹⁴ C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1141	3, 2, 2← 2, 1, 1	Ground					28 083.53	
Cl ₂ ^b O ¹⁶	4-1484	10, 2, 9←11, 1,10	Ground					28 083.75	
Cl ₂ ^b O ¹⁶	4-1484	10, 2, 9←11, 1,10	Ground					28 084.74	
(C ¹² H ₃) ₃ C ¹² I ¹²⁷	3- 991	9, ← 8,	Ground					28 085.	30.
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 0, 4← 3, 1, 3						28 086.39	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	10, 0,10← 9, 0, 9	Ground					28 087.9	.3
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	5, 3, 2← 5, 2, 3	Ground					28 097.1	.2
H ₃ C ¹² C ¹² :C ¹² Br ⁷⁹	4- 941	9, ← 8,	Ground					28 099.90	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² F ¹⁹	3- 982	3, 3, 1← 2, 2, 1	Ground					28 100.92	.03
Sb ¹²³ H ₂ D	4-1796	1, 1, 1← 1, 0, 1	Ground		7/2		5/2	28 102.66	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						28 105.	3.
Sb ¹²¹ H ₂ D	4-1795	1, 1, 1← 1, 0, 1	Ground		5/2		3/2	28 105.28	
Sb ¹²³ H ₂ D	4-1796	1, 1, 1← 1, 0, 1	Ground		7/2		9/2	28 105.80	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					28 107.75	.04
Sb ¹²¹ H ₂ D	4-1795	1, 1, 1← 1, 0, 1	Ground		5/2		7/2	28 108.55	
O ^b O ^b O ^b	4-1847	Not Reported						28 116.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	5, 0, 5← 4, 0, 4	Ground					28 116.99	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					28 119.5	.1
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					28 120.18	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	6, 3, 3← 6, 2, 4	Ground					28 121.48	.05
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					28 122.02	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	10, 9, 2←10, 7, 3	Ground					28 125.0	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	12, 4, 8←12, 3, 9	Ground					28 139.55	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	12, 4, 8←12, 3, 9	Ground					28 141.00	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					28 142.85	.04
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 144.2	.1
C ¹³ H ₃ I ¹²⁷	4- 483	2, 0← 1, 0	Ground		7/2		7/2	28 145.01	.08
Si ³⁰ H ₃ F ¹⁹	4-1553	1, ← 0,	Ground					28 145.2	.2
HC ¹² *:C ¹² HO ¹⁶ C ¹² O ¹⁶ O ¹⁶ *	4- 931	4, 2, 3← 3, 2, 2	Ground					28 151.36	.10
Si ²⁸ HCl ₃ ³⁷	4-1504	6, ← 5,	Ground					28 152.85	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 154.	5.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Excited		7/2		7/2	28 154.7	.5
C ¹² HD ₂ C ¹² :C ¹² D	4-1051	2, 0, 2← 1, 0, 1	Ground					28 155.14	.1
C ¹² D ₃ Ge ⁷⁴ H ₃	3- 296	2, 0← 1, 0	Ground					28 155.20	.10
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 3, 2← 5, 2, 3	Excited					28 155.63	.03
Sb ¹²¹ H ₂ D	4-1795	1, 1, 1← 1, 0, 1	Ground		7/2		7/2	28 158.14	
P ³¹ H ₂ D	4-1782	3, 1, 3← 3, 0, 3	Ground					28 158.53	.05
Sb ¹²³ H ₂ D	4-1796	1, 1, 1← 1, 0, 1	Ground		9/2		9/2	28 162.78	
C ¹² DHCl ₂ ³⁵	4- 344	7, 1, 6← 7, 0, 7	Ground					28 167.	5.
Sb ¹²¹ H ₂ D	4-1795	1, 1, 1← 1, 0, 1	Ground		7/2		5/2	28 168.04	
C ¹² H ₃ O ¹⁶ H	3- 211	14, 2, ←14, 1,	Ground					28 169.31	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Excited		9/2		9/2	28 171.66	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Excited		9/2		9/2	28 173.18	
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	4, 1, 3← 4, 0, 4	Ground		5/2		5/2	28 173.62	.05
Sb ¹²³ H ₂ D	4-1796	1, 1, 1← 1, 0, 1	Ground		9/2		7/2	28 174.48	
Sb ¹²³ H ₂ D	4-1796	1, 1, 1← 1, 0, 1	Ground		5/2		5/2	28 175.07	
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	4, 1, 3← 4, 0, 4	Ground		11/2		11/2	28 175.25	.05
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						28 177.7	.3
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	4, 1, 3← 4, 0, 4	Ground		7/2		7/2	28 178.26	.05
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	4, 1, 3← 4, 0, 4	Ground		9/2		9/2	28 179.95	.05
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	6, 3, 3← 6, 2, 4	Ground					28 180.80	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4← 3, 1, 3	Ground		5/2		5/2	28 181.3	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					28 183.46	.1
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	10, 5, 6← 9, 5, 5	Ground					28 183.7	.3
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	10, 3, 7← 9, 3, 6	Ground					28 183.7	.3
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	10, 5, 5← 9, 5, 4	Ground					28 183.7	.3
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	10, 3, 8← 9, 3, 7	Ground					28 183.7	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 185.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					28 186.02	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Excited		17/2		17/2	28 186.94	
B ¹¹ B ¹⁰ B ₃ ¹¹ H ₉	4- 53	2, 1, 1← 1, 0, 1	Ground					28 187.1	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
Sb ¹²¹ H ₂ D	4-1795	1, 1, 1← 1, 0, 1	Ground	3/2	5/2			28 187.74	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Excited	17/2	17/2			28 188.82	
H ₂ C ¹² :C ¹² DF ¹⁹	4- 784	5, 1, 4← 5, 1, 5	Ground					28 189.7	.1
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	5, 1, 4← 4, 2, 3	Ground					28 190.00	.10
Sb ¹²³ H ₂ D	4-1796	1, 1, 1← 1, 0, 1	Ground	5/2	7/2			28 190.15	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	5, 2, 3← 5, 2, 4	Ground					28 192.1	.1
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	4, 0, 4← 3, 1, 3	Ground	9/2	7/2			28 196.8	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	4, 0, 4← 3, 1, 3	Ground	7/2	5/2			28 196.8	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	4, 0, 4← 3, 1, 3	Ground	9/2	7/2			28 196.8	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	4, 0, 4← 3, 1, 3	Ground	7/2	5/2			28 196.8	.2
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	12, 3, 9←12, 2,10	Ground	25/2	25/2			28 198.0	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	12, 3, 9←12, 2,10	Ground	23/2	23/2			28 198.0	
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	4, 0, 4← 3, 1, 3	Ground	11/2	9/2			28 199.6	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	4, 0, 4← 3, 1, 3	Ground	5/2	3/2			28 199.6	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	4, 0, 4← 3, 1, 3	Ground	11/2	9/2			28 199.6	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	4, 0, 4← 3, 1, 3	Ground	5/2	3/2			28 199.6	.2
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					28 200.	20.
C ¹³ H ₃ I ¹²⁷	4- 483	2, 1← 1, 1	Ground	7/2	5/2			28 206.90	.08
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 1,10← 9, 1, 9	Ground					28 207.61	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					28 207.9	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	12, 3, 9←12, 2,10	Ground	21/2	21/2			28 208.0	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	12, 3, 9←12, 2,10	Ground	27/2	27/2			28 208.0	
C ¹² D ₃ Ge ⁷⁴ H ₃	3- 296	2, 0← 1, 0	Ground					28 211.9	.10
P ³¹ O ¹⁶ Cl ³⁵	4-1511	7, ← 6,	Ground					28 212.8	.5
C ¹² *H ₂ Sb ¹² *H ₂	4- 854	Not Reported						28 218.0	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					28 218.66	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Excited	11/2	11/2			28 219.44	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	9, 9, 0← 9, 8, 1	Ground					28 220.48	.05
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	9, 9, 0← 9, 8, 1	Ground					28 221.17	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Excited	11/2	11/2			28 221.33	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					28 222.08	
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -E	3- 514	5, 1, 4← 5, 0, 5	Ground					28 223.58	.35
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, ← 2,	Excited					28 224.5	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4← 3, 1, 3	Excited	11/2	9/2			28 225.6	
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	18, 6,12←18, 5,14	Ground					28 226.0	.3
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	4, 1, 3← 4, 1, 4	Ground					28 226.45	.2
t-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 771	6, 1, 5← 5, 1, 4	Ground					28 228.93	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4← 3, 1, 3	Excited	5/2	3/2			28 231.0	
O ¹⁶ F ₂ ¹⁹	4-1611	32, 6,27←31, 7,24	Ground					28 231.06	.10
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4← 3, 1, 3	Excited					28 231.54	.08
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, 1← 2, 1						28 232.47	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4← 3, 1, 3	Ground	7/2	7/2			28 233.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 234.	5.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Excited	15/2	15/2			28 235.42	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4← 3, 1, 3	Excited	9/2	7/2			28 235.5	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5 $\leftarrow$ 6, 0, 6	Excited	15/2		15/2		28 237.20	
HC ¹² O ¹⁸ O ¹⁶ C ¹² H ₃ -A	3- 513	5, 1, 4 $\leftarrow$ 5, 0, 5	Ground					28 238.31	.2
O ^b O ^b O ^b	4-1847	Not Reported						28 239.	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4 $\leftarrow$ 3, 1, 3	Excited	7/2		5/2		28 241.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 246.	5.
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5 $\leftarrow$ 6, 0, 6	Excited	13/2		13/2		28 246.1	.5
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, 0 $\leftarrow$ 2, 0						28 250.32	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, 1 $\leftarrow$ 2, 1						28 251.82	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, 2 $\leftarrow$ 2, 2						28 252.49	
C ¹³ H ₃ I ¹²⁷	4- 483	2, 1 $\leftarrow$ 1, 1	Ground	5/2		5/2		28 253.84	.08
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4 $\leftarrow$ 3, 1, 3	Ground	11/2		9/2		28 253.9	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, $\leftarrow$ 2,	Ground					28 254.05	.03
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, 2 $\leftarrow$ 2, 2						28 254.8	
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	6, 4, 3 $\leftarrow$ 6, 2, 4	Ground					28 254.8	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 258.	5.
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4 $\leftarrow$ 3, 1, 3	Ground	5/2		3/2		28 259.3	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	3, 1, 3 $\leftarrow$ 2, 1, 2						28 259.80	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4 $\leftarrow$ 3, 1, 3	Ground					28 259.86	.06
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	3, 1, 3 $\leftarrow$ 2, 1, 2						28 261.19	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4 $\leftarrow$ 3, 1, 3	Ground	9/2		7/2		28 263.7	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5 $\leftarrow$ 6, 0, 6	Ground	7/2		7/2		28 264.34	
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	7, 5, 3 $\leftarrow$ 7, 3, 4	Ground					28 265.6	.1
C ¹² H ₂ :C ¹² HC ¹² N ¹⁵	4-1025	3, 1, 2 $\leftarrow$ 2, 1, 1	Ground					28 267.2	.15
C ¹² HD ₂ C ¹² :C ¹² D	4-1051	2, 1, 1 $\leftarrow$ 1, 1, 0	Ground					28 267.33	.1
C ¹³ H ₃ O ¹⁶ H	3- 213	11, 2, $\leftarrow$ 11, 1,	Ground					28 267.71	.1
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					28 268.49	
C ¹² D ₃ Ge ⁷² H ₃	3- 295	2, 0 $\leftarrow$ 1, 0	Ground					28 269.15	.10
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4 $\leftarrow$ 3, 1, 3	Ground	7/2		5/2		28 269.4	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, $\leftarrow$ 2,	Ground					28 272.72	.03
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					28 275.1	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5 $\leftarrow$ 6, 0, 6	Ground	9/2		9/2		28 275.88	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground	9/2		7/2		28 278.10	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground	7/2		5/2		28 278.10	.2
(C ¹² H ₃) ₂ S ³²	3- 601	13, 2,12 $\leftarrow$ 12, 3, 9	Ground					28 278.31	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground	9/2		7/2		28 278.78	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground	7/2		5/2		28 278.78	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	10, 9, 2 $\leftarrow$ 10, 7, 3	Excited					28 279.0	.1
C ¹² HD:C ¹² DBr ^h	4- 749	Not Reported	Ground					28 279.5	.1
(C ¹² H ₃) ₂ S ³²	3- 601	13, 2,12 $\leftarrow$ 12, 3, 9	Ground					28 279.87	.05
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	5, 3, 3 $\leftarrow$ 5, 1, 4	Ground					28 280.6	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground	11/2		9/2		28 281.08	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground	5/2		3/2		28 281.08	.2
(C ¹² H ₃) ₂ S ³²	3- 601	13, 2,12 $\leftarrow$ 12, 3, 9	Ground					28 281.45	.05
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground	11/2		9/2		28 281.76	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground	5/2		3/2		28 281.76	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 282.	5.
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, ← 2,	Excited					28 282.19	
C ¹² HD:C ¹² DBr ^h	4- 749	Not Reported	Ground					28 284.85	.1
O ¹⁶ F ₂ ¹⁹	4-1611	27, 5,22←26, 6,21	Ground					28 286.80	.10
C ¹² H ₂ :C ¹³ HC ¹² N ¹⁴	4-1023	3, 0, 3← 2, 0, 2	Ground					28 287.5	.15
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	4, 1, 3← 4, 1, 4	Ground					28 290.1	.1
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹² N ¹⁵)	4- 904	2, 1, 2← 1, 0, 1	Ground					28 290.63	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Ground	17/2		17/2		28 291.66	
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 0← 2, 0	Ground	7/2		7/2		28 302.	
C ¹² H ₂ :C ¹³ HC ¹² N ¹⁴	4-1023	3, 2, 2← 2, 2, 1	Ground					28 304.8	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	12, 3, 9←12, 2,10	Ground	25/2		25/2		28 305.51	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	12, 3, 9←12, 2,10	Ground	23/2		23/2		28 305.51	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	4, 2, 3← 5, 1, 4	Ground	3		4		28 308.2	
s-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 203	3, 2, 2← 2, 2, 1	Ground					28 311.60	2.
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					28 311.9	.5
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	4, 2, 3← 4, 0, 4	Ground					28 312.4	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	12, 3, 9←12, 2,10	Ground	21/2		21/2		28 313.04	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	12, 3, 9←12, 2,10	Ground	27/2		27/2		28 313.04	
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 2← 2, 2	Ground	5/2		5/2		28 313.36	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 2← 2, 2	Ground	7/2		5/2		28 313.36	.05
C ¹² H ₂ :C ¹² HC ¹³ N ¹⁴	4-1024	3, 0, 3← 2, 0, 2	Ground					28 315.2	.15
C ¹² H ₃ O ¹⁶ H	3- 211	4, 0, ← 3, 1,	Ground					28 316.03	.1
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 1← 2, 1	Ground	7/2		7/2		28 316.95	.05
(C ¹² H ₃) ₃ N ¹⁴ .B ¹¹ (C ¹² H ₃) ₃	3-1081	9, ← 8,						28 318.	10.
C ¹² H ₂ :C ¹³ HC ¹² N ¹⁴	4-1023	3, 2, 1← 2, 2, 0	Ground					28 319.0	.15
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	4, 2, 3← 5, 1, 4	Ground	4		5		28 322.1	
(C ¹² H ₃) ₃ C ¹² F ¹⁹	3- 981	3, ← 2,	Excited					28 323.09	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 3, 2← 5, 2, 3	Ground					28 323.90	.03
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Ground	11/2		11/2		28 324.08	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					28 327.9	.2
S ³² *C ¹² H:C ¹³ HC ¹² H:C ¹² *H	4-1168	3, 2, 1← 2, 2, 0	Ground					28 328.0	.05
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Ground	5/2		5/2		28 329.3	
HC ¹² :C ¹³ C ¹² HO ¹⁶	4- 913	3, 1, 2← 2, 1, 1	Ground					28 330.10	.02
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						28 330.59	
C ¹² H ₂ :C ¹² HC ¹³ N ¹⁴	4-1024	3, 2, 2← 2, 2, 1	Ground					28 331.6	.15
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	4, 2, 3← 3, 2, 2	Ground					28 332.05	.2
C ¹² H ₃ P ³¹ H ₂	3- 271	14, 2,12←13, 3,10	Ground					28 332.3	.1
HC ¹² :C ¹² C ¹³ HO ¹⁶	4- 914	3, 1, 2← 2, 1, 1	Ground					28 334.12	.02
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 336.	5.
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	4, 2, 3← 5, 1, 4	Ground	5		6		28 337.4	
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	11, 4, 7←11, 3, 8	Ground	25/2		25/2		28 338.33	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	11, 4, 7←11, 3, 8	Ground	19/2		19/2		28 338.33	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	11, 4, 7←11, 3, 8	Ground	23/2		23/2		28 338.33	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	11, 4, 7←11, 3, 8	Ground	21/2		21/2		28 338.33	.2
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Ground	15/2		15/2		28 339.12	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 0← 2, 0	Ground	3/2		1/2		28 339.44	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 0← 2, 0	Ground	5/2		3/2		28 339.44	.05
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						28 340.0	
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	11, 4, 7←11, 3, 8	Ground	23/2		23/2		28 341.10	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	11, 4, 7←11, 3, 8	Ground	25/2		25/2		28 341.10	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	11, 4, 7←11, 3, 8	Ground	19/2		19/2		28 341.10	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	11, 4, 7←11, 3, 8	Ground	21/2		21/2		28 341.10	.2
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 1← 2, 1	Ground	5/2		3/2		28 342.11	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 1← 2, 1	Ground	7/2		5/2		28 342.11	.05
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 4← 3, 1, 3	Ground	9/2		9/2		28 342.3	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	10, 9, 2←10, 7, 3	Excited					28 342.4	.1
C ¹² H ₃ C ¹³ H ₂ F ¹⁹	3- 555	2, 1, 1← 2, 0, 2	Ground					28 343.1	.1
C ¹³ H ₃ I ¹²⁷	4- 483	2, 0← 1, 0	Ground	3/2		3/2		28 343.64	.08
C ¹² D ₃ N ¹⁴ O ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					28 344.	2.0
C ¹² H ₂ :C ¹² HC ¹³ N ¹⁴	4-1024	3, 2, 1← 2, 2, 0	Ground					28 344.7	.15
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	6, 1, 5← 6, 0, 6	Ground	13/2		13/2		28 347.34	
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 2← 2, 2	Ground	5/2		3/2		28 349.62	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 2← 2, 2	Ground	3/2		3/2		28 349.62	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 0← 2, 0	Ground	9/2		7/2		28 351.95	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 0← 2, 0	Ground	7/2		5/2		28 351.95	.05
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	4, 2, 3← 5, 1, 4	Ground	6		7		28 354.2	
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 1← 2, 1	Ground	9/2		7/2		28 354.93	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 1← 2, 1	Ground	3/2		1/2		28 354.93	.05
B ¹¹ B ¹⁰ B ₃ ¹ H ₉	4- 53	2, 2, 0← 1, 1, 0	Ground					28 359.7	.2
B ¹⁰ B ₄ ¹ H ₉	4- 52	2, ← 1,	Ground					28 359.7	.2
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 1← 2, 1	Ground	5/2		5/2		28 360.04	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 361.	5.
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 2← 2, 2	Ground	9/2		7/2		28 364.13	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 2← 2, 2	Ground	7/2		7/2		28 364.13	.05
B ¹¹ B ¹⁰ B ¹¹ B ¹⁰ B ¹¹ H ₉	4- 55	2, 1, 1← 1, 0, 1	Ground					28 364.5	.5
C ¹³ H ₂ :C ¹² HC ¹² N ¹⁴	4-1022	3, 1, 2← 2, 1, 1	Ground					28 364.5	.15
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	8, 6, 3← 8, 4, 4	Ground					28 364.6	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 368.5	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 371.	5.
(C ¹² H ₃) ₂ O ¹⁸	3- 595	1, 1, 0← 1, 0, 1	Ground					28 372.7	.2
D ₂ O ₂ ⁶	3- 42	Not Reported						28 373.	3.
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	3, 1, 2← 2, 1, 1	Ground					28 373.6	.05
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	11, 3, 8←11, 2, 9	Ground					28 375.46	.2
C ¹² H ₃ S ³² C ¹² N ¹⁴	3- 431	5, , ← 4, ,	Excited					28 380.	10.
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 1← 2, 1	Ground	3/2		3/2		28 380.00	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					28 380.93	.1
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	11, 3, 8←11, 2, 9	Ground					28 381.10	.2
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	13, 2,11←14, 1,14	Ground					28 384.	
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	11,10, 2←11, 8, 3	Ground					28 384.5	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Excited	11/2		9/2		28 387.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ Ge ⁷⁰ H ₃	3- 294	2, 0← 1, 0	Ground					28 389.10	.10
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 5← 4, 1, 4	Ground	7/2		5/2		28 389.12	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	6, 3, 3← 6, 2, 4	Ground					28 389.86	.2
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 0← 2, 0	Ground	3/2		3/2		28 390.13	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 5← 4, 1, 4	Ground	9/2		7/2		28 390.42	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Ground	7/2		7/2		28 391.3	
B ₃ H ₉	4- 65	Not Reported	Ground					28 392.	.1
Si ²⁹ H ₃ F ¹⁹	4-1552	1, ← 0,	Ground					28 393.4	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Excited	5/2		3/2		28 394.1	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Excited					28 394.63	.04
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Excited	9/2		7/2		28 399.45	
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 2← 2, 2	Ground	1/2		1/2		28 400.43	.05
(C ¹² H ₃) ₃ As ⁷⁵	3- 791	3, 2← 2, 2	Ground	3/2		1/2		28 400.43	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 5← 4, 1, 4	Ground	11/2		9/2		28 405.78	
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	7, ← 6,	Ground					28 405.8	.3
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Excited	7/2		5/2		28 406.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 407.	5.
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 409.8	.1
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	4, 1, 3← 3, 1, 2	Ground					28 410.93	.2
C ¹³ H ₃ I ¹²⁷	4- 483	2, 1← 1, 1	Ground	7/2		7/2		28 411.19	.08
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 5← 4, 1, 4		5/2		3/2		28 413.20	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						28 414.2	.3
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		28 416.1	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 420.	5.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	10, 9, 2←10, 7, 3	Excited					28 421.2	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					28 421.47	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		28 422.4	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Ground					28 423.22	.07
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 5← 4, 1, 4	Ground	13/2		11/2		28 425.40	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		28 427.9	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 5← 4, 1, 4	Ground	15/2		13/2		28 433.50	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Ground	7/2		5/2		28 434.6	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	5, 1, 4← 5, 0, 5	Ground	11/2		11/2		28 436.96	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 438.	5.
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						28 438.1	.3
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	3, 0, 3← 2, 0, 2	Ground					28 440.84	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	5, 1, 4← 5, 0, 5	Ground	9/2		9/2		28 443.22	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 443.7	.1
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	11, 1,10←11, 0,11	Ground					28 445.64	.2
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	5, 1, 4← 5, 0, 5	Ground	13/2		11/2		28 445.75	.05
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0,10← 9, 1, 9	Ground					28 446.98	
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	7, 1, 6← 7, 0, 7	Ground	11/2		11/2		28 448.6	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	7, 1, 6← 7, 0, 7	Ground	17/2		17/2		28 449.4	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 450.0	.2
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	7, 1, 6← 7, 0, 7	Ground					28 451.00	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	7, 1, 6← 7, 0, 7	Ground	13/2	13/2			28 452.5	.05
C ¹² H ₃ C ¹² D ₂ Cl ³⁵	3- 547	7, 1, 6← 7, 0, 7	Ground	15/2	15/2			28 453.3	.05
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	5, 1, 4← 5, 0, 5	Ground	11/2	9/2			28 453.58	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 453.7	.1
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						28 455.1	.3
C ¹² H ₂ (C ¹² N ¹⁴)(C ¹³ N ¹⁴)	4- 905	10, 1, 9←10, 0,10	Ground					28 456.41	
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	3, 2, 2← 2, 2, 1	Ground					28 457.34	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	5, 1, 4← 5, 0, 5	Ground	13/2	13/2			28 460.03	.05
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						28 462.5	1.
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	5, 1, 4← 5, 0, 5	Ground	7/2	7/2			28 466.19	.05
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 1, 2← 2, 1, 1	Ground					28 467.15	.02
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	11, 3, 8←11, 2, 9	Ground					28 467.34	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 468.	5.
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	3, 2, 1← 2, 2, 0	Ground					28 470.75	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	11, 3, 8←11, 2, 9	Ground					28 473.03	.2
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	5, 1, 4← 5, 0, 5	Ground	15/2	13/2			28 473.63	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 480.5	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	5, 1, 4← 5, 0, 5	Ground	9/2	7/2			28 480.95	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	10, 9, 2←10, 7, 3	Excited					28 485.0	.1
S ³² *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1161	3, 1, 2← 2, 1, 1	Ground					28 488.6	.1
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	6, 3, 3← 6, 2, 4	Ground					28 495.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	29,14, ←28,15,	Ground					28 496.04	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	29,14, ←28,15,	Ground					28 496.19	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	29,14, ←28,15,	Ground					28 496.98	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					28 500.	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 3, 2← 5, 2, 3	Excited					28 501.20	.03
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	11, 1,10←11, 0,11	Ground					28 501.29	.2
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	2, 0, 2← 2, 1, 1	Ground					28 506.78	.4
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 509.6	.1
O ^b O ^b O ^b	4-1847	Not Reported						28 510.	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					28 511.7	.5
B ¹¹ B ¹⁰ B ₃ ¹¹ H ₉	4- 53	2, 2, 1← 1, 1, 1	Ground					28 513.8	.2
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	8, 2, 6← 8, 1, 7	Ground					28 513.80	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	9, 2, 7← 9, 1, 8	Ground					28 513.87	.2
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	8, 2, 6← 8, 1, 7	Ground					28 514.05	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	10, 2, ← 9, 3,	Ground					28 515.45	.1
C ¹³ H ₃ I ¹²⁷	4- 483	2, 0← 1, 0	Ground	9/2	7/2			28 518.14	.08
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	5, 1, 5← 4, 1, 4	Ground					28 518.24	
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	2, 1, 1← 1, 1, 0	Ground					28 519.5	.2
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 4← 3, 1, 3	Ground	9/2	9/2			28 521.6	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	9, 2, 7← 9, 1, 8	Ground					28 521.60	.2
S ³⁴ F ₃ Cl ³⁷	4-1424	8, ← 7,	Ground					28 522.04	.5
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						28 526.33	.1
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 1, 2← 2, 1, 1	Excited					28 527.18	.15
Re ¹⁸⁷ O ₃ F ¹⁹	4-1592	4, 3← 3, 3	Ground					28 529.35	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 530.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					28 530.1	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					28 533.92	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					28 534.	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	2, 0, 2← 2, 1, 1	Ground					28 536.30	.2
S ³² F ₅ ¹⁹ Cl	4-1422	8, ← 7,	Ground					28 536.32	.5
Re ¹⁸⁵ O ₃ F ¹⁹	4-1591	4, 3← 3, 3	Ground					28 537.27	
B ₂ ¹⁰ B ₃ ¹¹ H ₉	4- 54	2, 1, 1← 1, 0, 1	Ground					28 537.7	.2
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	10, 5, 6←10, 5, 5	Ground					28 540.65	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 541.7	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 542.2	.1
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	3, 1, 3← 2, 1, 2	Ground					28 549.1	.2
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	4, 1, 3← 3, 0, 3	Ground					28 549.9	.3
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					28 550.	
C ¹³ H ₃ I ¹²⁷	4- 483	2, 0← 1, 0	Ground	7/2		5/2		28 550.86	.08
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 556.9	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	5, 2, 3← 5, 1, 4	Ground					28 557.28	.05
N ¹⁴ D ₂ H	4-1774	2, 1, 2← 2, 0, 2	Ground					28 560.90	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	5, 0, 5← 4, 1, 4	Ground					28 563.29	.05
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		28 570.80	
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						28 571.69	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	6, 4, 3← 6, 3, 4	Excited					28 573.	2.
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	4, 1, 4← 3, 1, 3	Ground					28 576.3	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		28 576.70	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 578.	5.
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	14, 2, 12←14, 1, 13	Ground					28 578.27	.2
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		28 579.50	
HC ¹³ HO ¹⁶	4- 382	18, 3, 15←18, 3, 16	Ground					28 582.40	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	2, 1, 2← 1, 0, 1	Excited					28 582.65	.1
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	4, 1, 4← 3, 1, 3	Ground	7/2		5/2		28 585.70	
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						28 586.2	
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	3, 1, 2← 2, 1, 1	Excited					28 587.40	.15
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	9, 1, 8← 9, 0, 9	Ground					28 587.43	
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	5, 1, 4← 4, 1, 3	Ground					28 592.69	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					28 593.5	.1
C ¹³ H ₃ I ¹²⁷	4- 483	2, 1← 1, 1	Ground	9/2		7/2		28 594.74	.08
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	7, 1, 6← 6, 2, 5	Ground					28 596.20	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	2, , ← 2, ,						28 601.6	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 602.	5.
N ¹⁴ H ₃	4-1771	10, 10←10, 10	Ground					28 604.73	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 605.5	.1
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	3, 1, 3← 2, 1, 2	Ground					28 607.4	.2
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	5, 3, 2← 5, 2, 3	Ground					28 611.8	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 612.1	.1
F ¹⁹ HC ¹² O ¹⁶	4- 271	6, 1, 5← 6, 1, 6						28 613.9	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² ₂ D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	2, 1, 2← 1, 0, 1	Excited					28 614.75	.1
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	5, 0, 5← 4, 0, 4	Ground					28 617.83	
C ¹³ H ₃ O ¹⁶ H	3- 213	26, 2, ←26, 1,	Ground					28 621.04	.1
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 1, ← 1, 1,	Ground					28 621.6	.2
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	7, ← 6,	Ground					28 622.2	.3
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	6, 1, 5← 6, 0, 6	Ground					28 622.28	.1
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						28 622.3	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 624.	5.
C ¹² ₂ D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	6, 5, 2← 6, 4, 3	Ground					28 624.7	.5
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	3, 0, 3← 2, 0, 2	Ground					28 625.8	.2
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0,10← 9, 1, 9	Ground					28 626.13	
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	11, 1,10←11, 0,11	Ground	25/2		25/2		28 626.79	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	10, 1, 9←10, 0,10	Ground					28 626.87	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					28 628.4	.2
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	11, 4, 8←11, 3, 9	Ground					28 629.7	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	9, 7, 3← 9, 5, 4	Ground					28 630.2	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	11, 1,10←11, 0,11	Ground					28 630.20	.2
HDO ₂ ¹⁶	3- 43	16, , ←16, ,						28 631.	3.
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	4, 1, 3← 4, 0, 4	Ground	5/2		5/2		28 632.35	.05
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	11, 1,10←11, 0,11	Ground	23/2		23/2		28 633.52	.05
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	4, 1, 3← 4, 0, 4	Ground	11/2		11/2		28 634.10	.05
C ¹² H ₃ C ¹² *H ₂ O ¹⁶ C ¹² *C ¹² H ₃	3- 951	2, 2, 1← 1, 1, 1	Ground					28 634.49	.2
HC ¹² :C ¹² C ¹² DO ¹⁶	4- 921	1, 1, 1← 2, 0, 2	Ground					28 635.67	.02
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	4, 1, 3← 4, 0, 4	Ground	7/2		7/2		28 637.11	.05
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0,10← 9, 1, 9	Ground					28 638.28	
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	4, 1, 3← 4, 0, 4	Ground	9/2		9/2		28 638.88	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 645.6	.2
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	3, 2, 2← 2, 2, 1	Ground					28 645.7	.2
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	8, 5, 3← 8, 5, 4	Ground					28 646.37	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 647.0	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 648.3	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 648.8	.2
C ¹³ H ₃ I ¹²⁷	4- 483	2, 0← 1, 0	Ground	5/2		5/2		28 650.91	.08
HDO ₂ ¹⁶	3- 43	16, , ←16, ,						28 651.	3.
C ¹² ₂ D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	2, 1, 2← 1, 0, 1	Excited					28 654.5	.5
Si ²⁸ H ₃ F ¹⁹	4-1551	1, ← 0,	Ground					28 655.8	.1
C ¹² O ¹⁸ F ₂ ¹⁹	4- 213	2, 0, 2← 1, 0, 1	Ground					28 658.85	.10
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	10, 1, 9← 9, 1, 8	Ground					28 661.5	.3
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	3, 2, 1← 2, 2, 0	Ground					28 661.7	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 1, 4← 3, 0, 3	Ground					28 662.85	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 1, 4← 3, 0, 3	Ground					28 664.17	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 1, 4← 3, 0, 3	Ground	11/2		9/2		28 667.02	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 1, 4← 3, 0, 3	Ground	7/2		5/2		28 667.02	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	4, 1, 4← 3, 0, 3	Ground	9/2		7/2		28 668.73	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 0,10← 9, 0, 9	Ground					28 669.96	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	5, 2, 4← 4, 2, 3	Ground					28 672.8	
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0,10← 9, 1, 9	Ground					28 674.0	
S ₂ ³² O ¹⁶	4-1821	3, 0, 3← 2, 0, 2	Ground					28 674.3	
N ¹⁴ D ₂ H	4-1774	5, 2, 4← 5, 1, 4	Ground					28 677.86	.05
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	11, 3, 8←11, 2, 9	Ground					28 680.63	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	4, 3, 2← 4, 2, 2	Ground		5/2		5/2	28 681.8	.05
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	8, 5, 3← 8, 5, 4	Ground					28 685.18	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	4, 3, 2← 4, 2, 2	Ground		11/2		11/2	28 685.5	.05
B ₃ ¹¹ B ₂ ¹⁰ H ₉	4- 56	2, 1, 1← 1, 0, 1	Ground					28 686.5	1.0
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	11, 3, 8←11, 2, 9	Ground					28 686.62	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					28 686.8	.1
C ¹³ H ₃ I ¹²⁷	4- 483	2, 1← 1, 1	Ground		3/2		3/2	28 687.21	.08
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	4, 3, 2← 4, 2, 2	Ground					28 689.19	.05
B ₃ ¹¹ B ₂ ¹⁰ H ₉	4- 56	2, 2, 0← 1, 1, 0	Ground					28 689.5	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	4, 3, 2← 4, 2, 2	Ground		7/2		7/2	28 692.6	.05
D ₂ O ₂ ¹⁶	3- 42	Not Reported						28 694.	3.
B ₃ ¹¹ B ₂ ¹⁰ H ₉	4- 56	2, 2, 1← 1, 1, 1	Ground					28 694.0	.5
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	5, 3, 2← 4, 3, 1	Ground					28 694.4	
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	5, 3, 3← 4, 3, 2	Ground					28 694.4	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	Not Reported						28 695.25	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	4, 3, 2← 4, 2, 2	Ground		9/2		9/2	28 695.6	.05
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	10, 4, 6←10, 3, 7	Ground					28 695.97	.2
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	7, 6, 2← 7, 4, 3	Ground					28 696.	1.
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	10, 4, 7←10, 3, 7	Ground		17/2		17/2	28 697.7	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 697.7	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	10, 4, 7←10, 3, 7	Ground		23/2		23/2	28 698.2	.05
S ₂ ³² O ¹⁶	4-1821	3, 2, 2← 2, 2, 1	Ground					28 699.3	
C ¹² H ₂ Cl ³⁵ Si ²⁸ D ₃	3- 237	5, 1, 4← 4, 1, 3	Ground					28 700.44	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	10, 4, 7←10, 3, 7	Ground		19/2		19/2	28 701.1	.05
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	10, 4, 7←10, 3, 7	Ground		21/2		21/2	28 701.6	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 702.	5.
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	10, 4, 6←10, 3, 7	Ground					28 705.21	.2
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	3, 2, 1← 2, 2, 0	Ground					28 705.6	.2
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 195	3, 2, 2← 2, 2, 1	Ground					28 708.60	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 196	3, 2, 2← 2, 2, 1	Ground					28 708.60	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 3, 8←11, 2, 9	Ground		23/2		23/2	28 710.85	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 3, 8←11, 2, 9	Ground		21/2		21/2	28 712.58	.15
B ₂ ¹⁰ B ₃ ¹¹ H ₉	4- 54	2, 2, 0← 1, 1, 0	Ground					28 715.	1.0
B ¹⁰ B ¹¹ B ¹⁰ B ¹¹ B ¹⁰ H ₉	4- 59	2, 1, 1← 1, 0, 1	Ground					28 715.	1.0
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 716.	5.
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	6, 4, 3← 6, 3, 4	Excited					28 716.5	.5
C ¹² HD:C ¹² DBr ^h	4- 749	Not Reported	Ground					28 718.4	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -E	3- 512	5, 1, 4← 5, 0, 5	Ground					28 720.05	.2
C ¹² D ₃ C ¹² O ¹⁶ F ¹⁹	3- 392	2, 1, 1← 1, 1, 0	Ground					28 721.12	.2
S ₂ ³² O ¹⁶	4-1821	3, 2, 1← 2, 2, 0	Ground					28 723.4	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 3, 8←11, 2, 9	Ground	25/2	25/2			28 725.02	.15
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 726.4	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	11, 3, 8←11, 2, 9	Ground	19/2	19/2			28 726.92	.15
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	5, 4, 2← 5, 2, 3	Ground					28 728.4	.3
B ¹¹ B ¹⁰ B ¹¹ B ¹⁰ B ¹¹ H ₉	4- 55	2, 2, 0← 1, 1, 0	Ground					28 732.	1.0
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	2, 1, 2← 1, 0, 1	Ground					28 732.50	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 1, 4← 3, 1, 3	Ground	11/2	9/2			28 733.50	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 734.4	.1
C ¹² D ₂ HC ¹² F ₃ ¹⁹	3- 413	3, 1, 2← 2, 1, 1	Ground					28 734.7	.2
Si ³⁰ F ₃ ¹⁹ H	4-1645	2, ← 1,	Ground					28 734.80	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹³ H ₃ -A	3- 511	5, 1, 4← 5, 0, 5	Ground					28 735.17	.2
(C ¹² H ₃) ₂ S ³²	3- 601	4, 1, 3← 3, 2, 2	Ground					28 738.25	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 1, 3← 3, 2, 2	Ground					28 738.69	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 1, 3← 3, 2, 2	Ground					28 739.14	.05
s-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 365	10, 3, 7←10, 2, 8	Ground					28 739.25	.2
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 1, 4← 3, 1, 3	Ground					28 740.1	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 740.5	.2
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 1, 4← 3, 1, 3	Ground	5/2	3/2			28 740.80	
C ₆ ¹² H ₅ O ¹⁶ H	3-1051	11, 4, 8←11, 3, 9	Ground					28 741.2	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 2, 9← 9, 2, 8	Ground					28 743.74	.05
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 1, 4← 3, 1, 3	Ground	9/2	7/2			28 743.80	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						28 746.70	.1
C ¹³ H ₃ O ¹⁶ H	3- 213	12, 2, ←12, 1,	Ground					28 747.67	.1
C ¹² H ₃ S ³² H	3- 221	10, 1, 9←10, 1.10	Ground					28 747.9	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 749.6	.1
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					28 751.0	.3
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 1, 4← 3, 1, 3	Ground	7/2	5/2			28 751.00	
P ³¹ H ₃ ^b	4-1785	Not Reported						28 759.35	.05
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	7, 3, 4← 7, 2, 5	Ground					28 761.07	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 762.	5.
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 0, 4← 3, 0, 3	Ground	5/2	5/2			28 767.2	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 4, 6← 9, 4, 5	Ground					28 770.2	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 3, 8← 9, 3, 7	Ground					28 770.2	.15
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 4, 7← 9, 4, 6	Ground					28 770.2	.15
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	4, 1, 3← 4, 0, 4	Ground					28 771.06	.05
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 3, 7← 9, 3, 6	Ground					28 772.3	.15
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	6, 4, 3← 6, 3, 4	Ground					28 775.67	.05
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	12, 8, 4←12, 7, 5	Ground					28 778.	2.
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 1← 4, 1	Ground					28 779.31	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 0← 4, 0	Ground					28 779.31	.10
Si ²⁹ F ₃ ¹⁹ H	4-1643	2, ← 1,	Ground					28 782.65	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					28 786.0	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						28 788.00	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						28 789.01	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	9, 2, 7← 9, 1, 8	Ground					28 789.33	.2
C ¹² _* DHC ¹² H:C ¹² _* H	4-1034	12, 6, 6←12, 6, 7	Ground					28 790.1	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						28 793.	3.
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	9, 2, 7← 9, 1, 8	Ground					28 796.36	.2
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	14, 2, 12←14, 2, 13	Ground					28 797.83	.2
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	4, 1, 3← 4, 0, 4	Ground		5/2		5/2	28 801.67	.05
D ₂ O ₂ ¹⁶	3- 42	Not Reported						28 802.	3.
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	4, 1, 3← 4, 0, 4	Ground		11/2		11/2	28 803.29	.05
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	4, 1, 3← 4, 0, 4	Ground		7/2		7/2	28 806.52	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 806.75	.1
C ¹² _* D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ _*	4-1092	4, 1, 3← 4, 0, 4	Ground					28 806.9	.1
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	4, 1, 3← 4, 0, 4	Ground		9/2		9/2	28 808.10	.05
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 3, 2← 3, 3, 1	Ground		5/2		3/2	28 808.8	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 809.5	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	4, 1, 3← 4, 0, 4	Ground		5/2		5/2	28 810.74	.05
F ¹⁹ H ₂ C ₂ ¹² H ₂ Cl ³⁵	3- 441	6, 0, 6← 5, 1, 5	Ground					28 812.	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	4, 1, 3← 4, 0, 4	Ground		11/2		11/2	28 812.06	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	4, 1, 3← 4, 0, 4	Ground		7/2		7/2	28 814.56	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	4, 1, 3← 4, 0, 4	Ground		9/2		9/2	28 815.92	.05
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 1← 4, 1	Excited					28 816.48	.20
C ¹² _* D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ _*	4-1092	8, 4, 4← 8, 3, 5	Ground					28 818.6	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 3, 2← 3, 3, 1	Ground		9/2		9/2	28 819.8	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						28 820.1	
C ¹² H ₃ P ³¹ H ₂	3- 271	9, 1, 9← 8, 2, 7	Ground					28 820.8	.1
s-C ¹² DH ₂ C ¹² H ₂ C ¹² H ₃	3- 785	5, 1, 4← 5, 0, 5	Ground					28 822.23	.06
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 0, 4← 3, 0, 3	Ground		7/2		7/2	28 822.7	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						28 823.9	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 825.	5.
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Excited		5/2		3/2	28 825.5	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						28 827.4	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 2, 8← 9, 2, 7	Ground					28 828.23	.05
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						28 829.4	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 829.8	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 830.	5.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 830.3	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					28 830.5	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	4, 2, 3← 4, 1, 4	Ground					28 830.61	.05
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						28 831.7	
Si ²⁸ F ₃ ¹⁹ H	4-1641	2, ← 1,	Ground					28 831.90	.1
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 4← 4, 4	Excited					28 832.	1.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 833.	5.
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 3← 4, 3	Excited					28 833.22	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 2← 4, 2	Excited					28 833.81	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 3← 4, 3	Excited					28 834.20	.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 4← 4, 4	Excited					28 834.20	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 1← 4, 1	Excited					28 834.45	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 0← 4, 0	Excited					28 835.26	.20
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	6, 4, 3← 6, 3, 4	Excited					28 836.27	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Excited	11/2		9/2		28 839.8	
HDS ³²	4-1727	12, 6, 6←12, 6, 7	Ground					28 842.84	.05
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	4, 2, 3← 5, 1, 4	Ground	5		6		28 843.6	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground					28 844.2	
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	Not Reported	Ground					28 849.1	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Ground	5/2		3/2		28 849.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 850.	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 850.	5.
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	7, 5, 3← 7, 4, 4	Ground					28 851.31	.05
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	5, 1← 4, 1	Excited					28 852.61	.20
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	Not Reported	Ground					28 853.3	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Excited					28 854.59	.02
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 3, 2← 3, 3, 1	Ground	11/2		9/2		28 854.8	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground					28 855.4	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					28 855.75	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	4, 1, 4← 3, 1, 3	Ground					28 856.2	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					28 857.8	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 857.8	.1
S ³² O ₂ ¹⁶	4-1831	17, 2,16←16, 3,13	Ground					28 858.11	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	9, 2, 7← 9, 1, 8	Ground					28 859.57	.2
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 0, 4← 3, 0, 3	Ground					28 862.34	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	4, 1, 3← 4, 0, 4	Ground	5/2		5/2		28 862.92	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					28 863.35	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Ground	11/2		9/2		28 863.7	
s-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 247	11, 2, 9←11, 2,10	Ground					28 864.70	.10
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	4, 1, 3← 4, 0, 4	Ground	11/2		11/2		28 864.73	.05
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Excited	7/2		5/2		28 866.2	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 2← 3, 2, 1	Ground	5/2		3/2		28 867.1	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	9, 2, 7← 9, 1, 8	Ground					28 867.37	.2
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	4, 1, 3← 4, 0, 4	Ground	7/2		7/2		28 867.92	.05
C ¹³ H ₃ O ¹⁶ H	3- 213	Not Reported	Ground					28 869.59	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	4, 1, 3← 4, 0, 4	Ground	9/2		9/2		28 869.63	.05
B ₃ ¹⁰ B ₂ ¹¹ H ₉	4- 58	2, 1, 1← 1, 0, 1	Ground					28 870.	1.0
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	11, 1,10←11, 0,11	Ground	19/2		19/2		28 870.45	.05
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	11, 1,10←11, 0,11	Ground	25/2		25/2		28 871.18	.05
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					28 871.5	
B ₂ ¹⁰ B ₃ ¹¹ H ₉	4- 54	2, 2, 1← 1, 1, 1	Ground					28 872.	1.0
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					28 872.8	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 873.2	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					28 873.4	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	4, 2, 3← 5, 1, 4	Ground	4		5		28 873.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 874.	5.
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	11, 1,10←11, 0,11	Ground					28 874.24	.2
C ¹² H ₃ O ¹⁶ H	3- 211	24, 2, ←24, 1,	Ground					28 874.45	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					28 875.1	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 3, 8←11, 2, 9	Ground	23/2		23/2		28 876.40	.4
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	11, 1,10←11, 0,11	Ground	21/2		21/2		28 877.25	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 3, 8←11, 2, 9	Ground	21/2		21/2		28 877.80	.4
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	11, 1,10←11, 0,11	Ground	23/2		23/2		28 877.90	.05
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Ground					28 878.13	.09
S ³² *HC ¹² :C ¹² HC ¹² H:C ¹² *H	4-1161	3, 2, 1← 2, 2, 0	Ground					28 879.1	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		28 881.5	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 3, 2← 3, 3, 1	Ground					28 883.84	.13
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0,10← 9, 1, 9	Ground					28 886.61	
C ^b H ₂ C ^b Cl ^b F ^b	4- 333	Not Reported						28 887.99	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 3, 8←11, 2, 9	Ground	25/2		25/2		28 889.0	.4
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Ground	7/2		5/2		28 889.7	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	1, 1, 0← 1, 0, 1	Ground					28 890.0	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	11, 3, 8←11, 2, 9	Ground	19/2		19/2		28 890.4	.4
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 892.4	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 2← 3, 2, 1	Ground					28 895.88	.08
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Ground	5/2		5/2		28 896.8	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	4, 2, 3← 5, 1, 4	Ground	3		4		28 897.9	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 3, 2← 3, 3, 1	Ground	7/2		5/2		28 898.7	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 3← 3, 2, 2	Ground	9/2		7/2		28 903.4	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					28 905.4	.1
C ¹² H ₃ O ¹⁶ H	3- 211	15, 2, ←15, 1,	Ground					28 905.70	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 906.	5.
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		28 907.3	
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					28 910.4	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					28 910.8	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 910.9	.1
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	Not Reported	Ground					28 914.3	
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	15, 2,13←16, 1,16	Ground					28 915.	
Cl ³⁵ O ¹⁶ O ¹⁸	4-1383	4, 2, 3← 5, 1, 4	Ground	2		3		28 915.8	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 916.6	.1
C ¹² H ₃ Si ²⁸ DF ¹⁹ ₂ -A	3- 197	3, 2, 2← 2, 2, 1	Ground					28 917.93	
C ¹² H ₃ Si ²⁸ DF ¹⁹ ₂ -E	3- 198	3, 2, 2← 2, 2, 1	Ground					28 917.93	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						28 920.40	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 2, 2← 3, 2, 1	Ground	9/2		7/2		28 921.4	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	11, 1,10←11, 0,11	Ground	19/2		19/2		28 923.43	.2
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0,10← 9, 1, 9	Ground					28 923.86	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 924.	5.
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	11, 1,10←11, 0,11	Ground	25/2		25/2		28 924.30	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	11, 1,10←11, 0,11	Ground					28 927.25	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	11, 1,10←11, 0,11	Ground	21/2		21/2		28 930.08	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 930.6	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 930.7	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	11, 1,10←11, 0,11	Ground	23/2		23/2		28 931.01	.2
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	8, 3, 5← 8, 3, 6	Ground					28 931.2	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					28 933.1	
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	5, 4, 2← 5, 2, 3	Ground					28 933.9	.3
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 3, 2← 3, 3, 1	Ground	5/2		5/2		28 934.5	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	28, 4,24←28, 4,25						28 935.	
S ³² *HC ¹³ :C ¹² HC ¹² H:C ¹² *H	4-1167	3, 2, 1← 2, 2, 0	Ground					28 935.8	.05
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 503	5, 1, 4← 5, 0, 5	Ground					28 936.10	.2
C ¹² H ₂ Cl ₂ ³⁵	4- 341	1, 1, 0← 1, 0, 1	Ground					28 936.6	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 2, 6← 6, 3, 3	Ground					28 938.18	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Excited	11/2		9/2		28 940.9	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 3, 2← 3, 3, 1	Ground	9/2		7/2		28 944.7	
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	Not Reported						28 945.3	.3
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Excited					28 947.00	.33
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	3, 3, 0← 3, 2, 1	Ground					28 947.30	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						28 950.	5.
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Excited	9/2		7/2		28 950.6	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 1, 1← 2, 0, 2	Ground					28 954.4	
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0,10← 9, 1, 9	Ground					28 954.85	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					28 955.44	.1
C ¹² *H ₂ C ¹² D:C ¹² *D	4-1033	10, 7, 3←10, 7, 4	Ground					28 955.5	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 3, 2← 3, 3, 1	Ground	7/2		7/2		28 956.4	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Excited	7/2		5/2		28 957.0	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 957.8	.1
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	9, 1, 8← 9, 0, 9	Ground					28 958.40	
O ₃ ¹⁶	4-1841	24, 4,20←25, 3,23	Ground					28 960.	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 1, 1← 2, 0, 2	Ground					28 960.42	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						28 961.55	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 961.9	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 3, 2← 3, 3, 1	Ground	5/2		3/2		28 964.6	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 965.5	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 967.2	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 969.1	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		28 969.2	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					28 969.9	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					28 974.4	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		28 974.5	
HC ¹² HO ¹⁶	4- 381	3, 1, 2← 3, 1, 3	Ground					28 974.85	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						28 974.95	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Ground					28 975.00	.06
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					28 975.36	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 976.1	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 3, 2← 3, 3, 1	Ground	9/2		9/2		28 978.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Ground	9/2	7/2			28 978.9	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	4, 3, 1← 3, 3, 0	Ground					28 981.60	.2
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	10, ← 9,	Ground					28 982.5	.3
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 0, 4← 3, 0, 3	Ground	7/2	7/2			28 984.1	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Ground	7/2	5/2			28 984.4	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 1, 1← 2, 0, 2	Ground					28 984.5	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 986.9	.1
B ₅ H ₉	4- 65	Not Reported	Ground					28 989.	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					28 989.2	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					28 990.3	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	5, 3, 3← 6, 2, 4	Ground					28 990.30	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					28 990.6	.3
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Excited	5/2	3/2			28 990.7	
DC ¹² N ¹⁴	4- 292	12←12	Excited					28 992.55	.20
C ¹² H ₂ :C ¹³ HC ¹² N ¹⁴	4-1023	3, 1, 2← 2, 1, 1	Ground					28 995.49	.15
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 007.1	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Excited	11/2	9/2			29 007.4	
C ¹² H ₂ :C ¹² HC ¹³ N ¹⁴	4-1024	3, 1, 2← 2, 1, 1	Ground					29 008.07	.15
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					29 010.24	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 011.0	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					29 011.74	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					29 012.73	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					29 012.9	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Ground	5/2	3/2			29 014.1	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 014.9	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						29 017.	3.
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					29 018.2	
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	4, 0, 4← 3, 1, 3	Excited					29 020.76	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 021.	5.
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	5, 1, 5← 4, 1, 4	Ground					29 022.88	.2
B ¹¹ B ¹⁰ B ¹¹ B ¹⁰ B ¹¹ H ₉	4- 55	2, 2, 1← 1, 1, 1	Ground					29 024.	1.0
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Excited					29 024.96	.18
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 0, 4← 3, 0, 3	Ground	11/2	9/2			29 027.4	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 0, 4← 3, 0, 3	Ground	9/2	7/2			29 027.4	
C ¹² DBr ₃ ⁸¹	4- 244	12, ←11,	Ground					29 028.2	.5
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 3, 2← 3, 3, 1	Ground	11/2	9/2			29 029.4	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Excited	9/2	9/2			29 029.6	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Ground	11/2	9/2			29 031.1	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 0, 4← 3, 0, 3	Ground					29 031.45	1.53
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 2← 3, 2, 1	Ground	5/2	3/2			29 032.5	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Excited	7/2	5/2			29 038.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 039.5	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 041.4	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						29 042.10	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 0, 4← 3, 0, 3	Ground	7/2		5/2		29 043.8	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 0, 4← 3, 0, 3	Ground	5/2		3/2		29 043.8	
S ³² ₂ DC ¹² :C ¹² HC ¹² H:C ¹² ₂ H	4-1162	3, 2, 1← 2, 2, 0	Ground					29 044.7	.1
B ₃ ¹⁰ B ₂ ¹¹ H ₉	4- 58	2, 2, 0← 1, 1, 0	Ground					29 045.	1.0
B ₂ ¹¹ B ₃ ¹⁰ H ₉	4- 57	2, 1, 1← 1, 0, 1	Ground					29 045.	1.0
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Ground	5/2		5/2		29 046.5	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Ground					29 048.49	.07
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		29 049.7	
C ¹² Cl ₃ ³⁷ C ¹² N ¹⁴	4- 584	9, ← 8,	Ground					29 050.0	20.
B ₂ ¹¹ B ₃ ¹⁰ H ₉	4- 57	2, 2, 0← 1, 1, 0	Ground					29 052.	1.0
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	9, 4, 6← 9, 4, 5	Ground					29 052.30	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						29 052.39	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground					29 053.6	.05
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 3, 2← 3, 3, 1	Ground					29 054.80	.28
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					29 055.20	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Excited	9/2		7/2		29 056.5	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 4← 3, 1, 3	Ground	9/2		9/2		29 056.8	
B ₂ ¹¹ B ₃ ¹⁰ H ₉	4- 57	2, 2, 1← 1, 1, 1	Ground					29 057.	1.0
(C ¹² H ₃) ₂ S ³²	3- 601	3, 2, 1← 3, 1, 2	Ground					29 060.28	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 2, 1← 3, 1, 2	Ground					29 060.86	.05
N ¹⁴ H ₃	4-1771	15,14←15,14	Ground					29 061.14	.10
(C ¹² H ₃) ₂ S ³²	3- 601	3, 2, 1← 3, 1, 2	Ground					29 061.45	.05
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Ground	7/2		5/2		29 062.1	
B ₃ ¹⁰ H ₉	4- 65	Not Reported	Ground					29 063.	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 1, 4← 3, 0, 3	Ground	5/2		3/2		29 066.43	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 2← 3, 2, 1	Ground					29 066.90	.11
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 1, 4← 3, 0, 3	Ground	11/2		9/2		29 068.51	
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 1, 4← 3, 0, 3	Ground	7/2		5/2		29 068.51	
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² ₂ H ₂	3- 761	Not Reported	Ground					29 069.38	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 1, 4← 3, 0, 3	Ground	9/2		7/2		29 070.50	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 3, 2← 3, 3, 1	Ground	7/2		5/2		29 072.4	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 1, 1← 2, 0, 2	Ground					29 072.68	.10
P ³¹ HD ₂	4-1783	1, 1, 0← 1, 0, 1	Ground					29 073.21	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					29 073.9	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁵	3- 363	4, 1, 4← 3, 0, 3	Ground	7/2		7/2		29 074.00	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					29 074.4	.1
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² ₂ H ₂	3- 761	8, 1, 7← 8, 0, 8	Ground					29 075.76	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						29 077.76	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 3← 3, 2, 2	Ground	9/2		7/2		29 079.2	
D ₂ C ¹² ₂ O ¹⁶ C ¹² ₂ D ₂	4- 843	3, 3, 0← 3, 2, 1	Ground					29 080.	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		29 080.4	
C ¹² ₂ D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ ₂	4-1092	6, 4, 3← 6, 3, 4	Ground					29 080.7	.1
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² ₂ H ₂	3- 761	8, 1, 7← 8, 0, 8	Ground					29 082.36	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						29 087.73	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					29 088.5	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F	Frequency MHz	Acc. ±MHz
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	8, 6, 3← 8, 5, 4	Ground		29 089.07	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		29 091.7	.1
C ¹² H ₃ S ³² H	3- 221	2, 1, 2← 3, 0, 3	Ground		29 091.9	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			29 092.	5.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 0, 3← 2, 1, 2	Ground		29 092.1	.5
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported			29 093.30	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	4, 2, 3← 3, 2, 2	Ground	9/2 7/2	29 093.65	.01
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	4, 2, 3← 3, 2, 2	Ground	9/2 7/2	29 094.66	.01
B ¹⁰ B ¹¹ B ¹⁰ B ¹¹ B ¹⁰ H ₉	4- 59	2, 2, 0← 1, 1, 0	Ground		29 095.	1.0
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 2, 2← 3, 2, 1	Ground	9/2 7/2	29 097.4	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	6, 1, 5← 6, 0, 6	Ground	9/2 9/2	29 104.23	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground		29 104.3	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Excited	11/2 9/2	29 104.4	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	6, 1, 5← 6, 0, 6	Ground	15/2 15/2	29 105.22	.05
S ³² O ¹⁶ F ¹⁹	4-1621	Not Reported			29 106.51	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Ground	7/2 7/2	29 108.0	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	6, 1, 5← 6, 0, 6	Ground	11/2 11/2	29 108.62	.05
C ¹² H ₃ C ¹³ H ₂ Cl ³⁵	3- 546	5, 0, 5← 4, 1, 4	Ground		29 109.25	.05
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	6, 1, 5← 6, 0, 6	Ground	13/2 13/2	29 109.55	.05
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Excited	5/2 3/2	29 110.9	
O ^b O ^b O ^b	4-1847	Not Reported			29 111.	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Excited		29 111.48	.5
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground		29 113.76	.1
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0, 10← 9, 1, 9	Ground		29 114.35	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 3, 2← 3, 3, 1	Ground	5/2 5/2	29 115.4	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Excited	9/2 7/2	29 115.9	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground		29 116.2	.1
C ₇ H ₁₃ N ¹⁴	4-1311	6, ← 5,	Excited		29 121.0	
t-C ¹² H ₂ DC ¹² H ₂ F ¹⁹	3- 554	2, 1, 1← 2, 0, 2	Ground		29 122.0	.1
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,			29 122.8	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Excited	7/2 5/2	29 122.8	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		29 123.46	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported			29 123.5	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 3, 2← 3, 3, 1	Ground	9/2 7/2	29 127.7	
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	19, 6, 13← 19, 5, 15	Ground		29 131.5	.3
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	8, 0, 8← 7, 1, 7	Ground		29 132.01	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,			29 132.6	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Ground	11/2 9/2	29 132.8	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground		29 132.8	.1
S ³² F ₅ ¹⁹ Cl	4-1422	8, ← 7,	Excited		29 134.05	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	2, 1, 1← 2, 0, 2	Ground		29 135.	2.
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground		29 135.	20.
D ₂ O ₂ ¹⁶	3- 42	Not Reported			29 136.	3.
DN ¹⁴ O ₃ ¹⁶	3- 32	3, 1, 2← 3, 1, 3	Ground		29 138.41	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		29 138.85	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HC ¹² N ¹⁴	4-1021	3, 1, 2← 2, 1, 1	Ground					29 139.01	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		29 139.3	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 139.3	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Ground					29 139.88	.04
Si ²⁸ HCl ₂ ³⁵ Cl ³⁷	4-1502	6, , ← 5, ,	Ground					29 140.	20.
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 140.	20.
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	12, 1,11←12, 0,12	Ground					29 142.97	.2
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	8, 1, 7← 8, 0, 8	Ground					29 143.	5.
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 3, 2← 3, 3, 1	Ground	7/2		7/2		29 144.3	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		29 144.6	
a-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 597	3, 1, 2← 3, 0, 3	Ground					29 145.4	.5
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 146.6	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					29 147.37	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 0, 4← 3, 0, 3	Ground	9/2		9/2		29 148.0	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 150.	20.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 150.7	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Ground	7/2		5/2		29 151.1	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 154.0	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Ground	5/2		5/2		29 154.2	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 155.5	.1
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	4, 0, 4← 3, 1, 3	Ground					29 158.73	.05
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	6, ← 5,	Excited					29 160.6	
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, ← 7,	Excited					29 163.27	
C ¹² *DHC ¹² H:C ¹² *H	4-1034	8, 4, 4← 8, 4, 5	Ground					29 165.3	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	12,10, 2←12,10, 3	Ground					29 166.78	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 167.6	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	7, 1, 6← 7, 1, 7	Ground					29 170.90	.4
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -E	3- 516	5, 1, 4← 5, 0, 5	Ground					29 171.96	.2
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	6, ← 5,	Ground					29 173.5	
HN ¹⁴ O ₃ ¹⁶	3- 31	5, 3, 2← 5, 3, 3	Ground					29 175.32	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 179.	.1
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	6, 3, 4← 6, 2, 5	Ground					29 179.00	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	7, 1, 6← 7, 1, 7	Ground					29 179.77	.2
S ³⁴ F ₅ ¹⁹ Cl ³⁵	4-1423	8, ← 7,	Ground					29 181.73	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 7← 7, 7	Ground	17/2		15/2		29 184.14	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 7← 7, 7	Ground	15/2		13/2		29 186.38	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 6← 7, 6	Ground	17/2		15/2		29 186.38	.5
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						29 186.9	
N ¹⁴ H ₂ D	4-1773	7, 2, 6← 7, 1, 6	Ground					29 186.99	.05
HC ¹² O ¹⁶ O ¹⁸ C ¹² H ₃ -A	3- 515	5, 1, 4← 5, 0, 5	Ground					29 187.25	.2
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	6, ← 5,	Excited					29 187.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 188.	.1
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 5← 7, 5	Ground	17/2		15/2		29 188.28	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 6← 7, 6	Ground	15/2		13/2		29 188.28	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 4← 7, 4	Ground	15/2		13/2		29 189.65	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 5← 7, 5	Ground		15/2		13/2	29 189.65	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 4← 7, 4	Ground		17/2		15/2	29 189.65	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					29 191.47	.1
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	4, 2, 2← 4, 1, 3	Ground					29 191.8	.2
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 3← 7, 3	Ground		17/2		15/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 3← 7, 3	Ground		13/2		11/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 0← 7, 0	Ground		13/2		11/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 0← 7, 0	Ground		17/2		15/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 2← 7, 2	Ground		17/2		15/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 1← 7, 1	Ground		19/2		17/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 1← 7, 1	Ground		17/2		15/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 2← 7, 2	Ground		15/2		13/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 1← 7, 1	Ground		15/2		13/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 1← 7, 1	Ground		13/2		11/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 2← 7, 2	Ground		19/2		17/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 0← 7, 0	Ground		19/2		17/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 3← 7, 3	Ground		19/2		17/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 3← 7, 3	Ground		15/2		13/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 4← 7, 4	Ground		19/2		17/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 2← 7, 2	Ground		13/2		11/2	29 192.96	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 0← 7, 0	Ground		15/2		13/2	29 192.96	.5
C ¹² H ₂ Cl ₂ ³⁵	4- 341	2, 1, 1← 2, 0, 2	Ground					29 193.4	.3
s-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 247	7, 1, 6← 7, 1, 7	Ground					29 194.80	.10
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 194.85	.1
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 6← 7, 6	Ground		19/2		17/2	29 195.41	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 7← 7, 7	Ground		19/2		17/2	29 195.41	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 5← 7, 5	Ground		19/2		17/2	29 195.41	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 4← 7, 4	Ground		13/2		11/2	29 195.41	.5
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 5← 7, 5	Ground		13/2		11/2	29 195.41	.5
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	10, 1, 9←10, 0,10	Ground					29 196.	5.
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 196.0	
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 6← 7, 6	Ground		13/2		11/2	29 196.82	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 198.	5.
c-HF ¹⁹ C ¹² :C ¹³ HF ¹⁹	4- 692	4, 0, 4← 3, 1, 3	Ground					29 198.25	.05
S ³² F ₅ ¹⁹ Cl ³⁵	4-1421	8, 7← 7, 7	Ground		13/2		11/2	29 198.53	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					29 199.6	
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 2, 2← 2, 2, 1	Ground		7/2		5/2	29 200.14	.1
C ¹³ HCl ³⁵ F ₂ ¹⁹	4- 253	3, 3, 1← 3, 2, 1	Ground					29 202.44	.10
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 204.4	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	Not Reported	Ground					29 204.6	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Excited		5/2		3/2	29 205.5	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Excited					29 205.71	
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 509	5, 1, 4← 5, 0, 5	Ground					29 208.06	.2
t-C ¹² H ₂ D:C ¹² H ₂ Cl ³⁵	3- 543	3, 2, 2← 2, 2, 1	Ground		5/2		3/2	29 208.89	.1
t-C ¹² HDC ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Excited		9/2		7/2	29 209.7	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₁₃ N ¹⁴	4-1311	6, ← 5,	Excited					29 211.1	
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 2, 2← 2, 2, 1	Ground		9/2		7/2	29 212.44	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					29 213.55	.1
C ¹² HBr ⁸¹	4- 242	12, ←11,	Ground					29 215.4	.5
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Excited		7/2		5/2	29 215.7	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 2, 3← 3, 2, 2	Ground		11/2		9/2	29 217.71	.01
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 218.	.1
N ¹⁴ O ¹⁶ O ¹⁸	4-1803	10, 0,10← 9, 1, 9	Ground					29 218.7	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 2, 3← 3, 2, 2	Ground		11/2		9/2	29 218.71	.01
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	Not Reported	Ground					29 219.2	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 1, 7← 8, 0, 8	Ground					29 220.78	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	Not Reported						29 221.05	
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	5, 0, 5← 4, 0, 4	Ground					29 222.29	
HC ¹³ O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 508	5, 1, 4← 5, 0, 5	Ground					29 223.59	.2
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 2, 1← 2, 2, 0	Ground		7/2		5/2	29 224.23	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Ground		11/2		9/2	29 226.5	
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	7, 2, 6← 8, 1, 7	Ground					29 227.	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	4, 1, 4← 3, 0, 3	Ground					29 228.46	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Ground		5/2		3/2	29 231.7	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Ground					29 232.17	.06
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 2, 1← 2, 2, 0	Ground		5/2		3/2	29 233.08	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Ground		9/2		7/2	29 235.9	
D ₂ C ¹² :C ¹² DCl ³⁵	4- 763	3, 1, 3← 2, 1, 2	Ground					29 235.95	
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 2, 1← 2, 2, 0	Ground		9/2		7/2	29 236.53	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 4← 3, 1, 3	Ground		9/2		9/2	29 237.6	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 238.6	.1
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	10, ← 9,	Ground					29 238.7	.3
D ₂ C ¹² :C ¹² DCl ³⁵	4- 763	3, 1, 3← 2, 1, 2	Ground					29 239.54	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 239.7	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground					29 240.3	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 2, 4← 5, 1, 5	Ground					29 240.6	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Ground		7/2		5/2	29 241.9	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					29 244.20	.1
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	3, 2, 1← 2, 2, 0	Ground		3/2		1/2	29 245.64	.1
C ¹² H ₁₃ N ¹⁴	4-1311	6, ← 5,	Excited					29 251.2	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					29 251.64	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	6, 2← 7, 1	Ground					29 251.8	
H ₂ N ¹⁴ N ¹⁴ H ₂ -	3- 51	Not Reported	Ground					29 252.01	
C ^b H ^b Cl ^b F ^b	4- 333	Not Reported						29 252.29	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	11,10, 2←11, 8, 3	Ground					29 252.6	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 254.7	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					29 255.9	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 257.5	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 2, 3← 3, 2, 2	Ground		9/2		7/2	29 259.34	.01
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 2, 3← 3, 2, 2	Ground		9/2		7/2	29 260.47	.01

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	11, 9, 2←11, 9, 3	Ground					29 261.23	.10
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁵	3- 901	10, 1, 9← 9, 1, 8	Ground					29 261.28	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 265.0	.1
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		29 265.88	.01
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 266.4	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		29 266.88	.01
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					29 267.0	.1
C ¹² H ₂ F ₂ ¹⁹	4- 351	4, 2, 2← 5, 1, 5	Ground					29 268.90	.10
C ¹² *H:C ¹² HO ¹⁸ C ¹² H:C ¹² *H	4-1152	9, 6, 3← 9, 6, 4	Ground					29 270.9	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	14, 2,12←14, 1,13	Ground					29 275.28	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 277.2	.1
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	5, 1, 5← 4, 1, 4	Ground					29 277.72	.2
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	3, 3, 1← 3, 2, 1	Ground	3/2		3/2		29 277.84	
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	5, 2, 4← 4, 2, 3	Ground					29 281.78	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 282.2	.1
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 1, 2← 2, 1, 1	Ground					29 282.90	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 285.3	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 286.8	.1
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	3, 3, 1← 3, 2, 1	Ground	9/2		9/2		29 287.5	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 2, 6← 8, 1, 7	Ground					29 289.95	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 290.	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 293.	5.
C ₇ H ₁₃ N ¹⁴	4-1311	6, ← 5,	Excited					29 294.1	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	3, 3, 1← 3, 2, 1	Ground					29 294.80	.03
C ¹³ H ₃ C ¹² H ₂ C ¹² H ₃	3- 782	5, 1, 4← 5, 0, 5	Ground					29 298.58	.06
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	3, 3, 1← 3, 2, 1	Ground	5/2		5/2		29 298.9	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 2, 6← 8, 1, 7	Ground					29 301.61	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 2, 6← 8, 1, 7	Ground					29 301.82	.1
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	5, 3, 3← 4, 3, 2	Ground					29 302.15	
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4- 991	5, 3, 2← 4, 3, 1	Ground					29 302.15	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 2, 6← 8, 1, 7	Ground					29 302.49	.1
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	3, 1, 2← 2, 1, 1	Excited					29 305.27	.10
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Ground	5/2		5/2		29 307.4	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 307.9	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	3, 3, 1← 3, 2, 1	Ground	7/2		7/2		29 308.7	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground					29 312.4	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 312.7	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 4← 3, 1, 3	Ground	9/2		9/2		29 313.75	
C ¹³ H ₃ O ¹⁶ H	3- 213	13, 2, ←13, 1,	Ground					29 315.20	.1
N ¹⁴ D ₂ H	4-1774	8, 3, 6← 8, 2, 6	Ground					29 319.47	.05
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 4, 1, 3		9/2		7/2		29 319.70	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 320.0	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 4, 1, 3		7/2		5/2		29 320.60	
S ³² O ₂ ¹⁶	4-1831	4, 0, 4← 3, 1, 3	Ground					29 321.22	.03
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					29 321.3	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹³ _* H:C ¹² HO ¹⁶ C ¹² H:C ¹² _* H	4-1157	12, 9, 3←12, 9, 4	Ground					29 323.1	.1
C ¹² HD:C ¹² HBr ^h	4-748	Not Reported	Ground					29 323.2	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3-571	5, 1, 4←4, 1, 3		11/2		9/2		29 324.64	
c-HDC ¹² _* O ¹⁶ C ¹² _* DH	4-845	4, 2, 2←4, 1, 3	Ground					29 326.2	.2
N ¹⁴ O ¹⁶ Br ^h	4-123	4, , ←3, ,						29 326.3	
O ¹⁶ _* C ¹² H ₂ C ¹² H ₂ C ¹² _* O ¹⁶	4-1071	3, 1, 2←2, 1, 1	Excited					29 327.65	.20
D ₂ N ¹⁴ C ¹² HO ¹⁶	3-154	4, 0, 4←3, 1, 3	Ground					29 328.44	
C ¹² HD:C ¹² DBr ^h	4-749	Not Reported	Ground					29 329.5	.1
N ¹⁴ O ¹⁶ Br ^h	4-123	4, , ←3, ,						29 330.4	
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3-571	5, 1, 4←4, 1, 3		5/2		3/2		29 332.26	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4-901	Not Reported	Ground					29 332.5	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4-211	10, 8, 2←10, 8, 3	Ground					29 335.23	.10
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3-191	Not Reported	Ground					29 336.4	
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3-611	1, 1, 0←1, 0, 1	Ground					29 337.	10.
C ¹² _* H ₂ S ^h C ¹² _* H ₂	4-854	Not Reported						29 337.0	.5
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3-571	5, 1, 4←4, 1, 3		13/2		11/2		29 337.28	
C ¹² H ₂ F ₂ ¹⁹	4-351	19, 6, 14←20, 5, 15	Ground					29 339.38	.10
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	3, 3, 0←3, 2, 1	Ground					29 342.20	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	8, 2, 6←8, 1, 7	Ground	17/2		17/2		29 342.20	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	8, 2, 6←8, 1, 7	Ground	15/2		15/2		29 342.20	.2
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3-611	1, 1, 0←1, 0, 1	Ground					29 343.	10.
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	8, 2, 6←8, 1, 7	Ground	19/2		19/2		29 343.42	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	8, 2, 6←8, 1, 7	Ground	13/2		13/2		29 343.42	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	3, 3, 0←3, 2, 1	Ground					29 343.42	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3-191	Not Reported	Ground					29 343.8	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 1←1, 1	Ground	1/2		1/2		29 345.03	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 1←1, 1	Ground	3/2		5/2		29 345.28	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 1←1, 1	Ground	3/2		1/2		29 345.28	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 1←1, 1	Ground	7/2		5/2		29 345.28	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 1←1, 1	Ground	1/2		3/2		29 345.28	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 1←1, 1	Ground	3/2		3/2		29 345.52	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 1←1, 1	Ground	5/2		5/2		29 345.52	
C ¹² HD:C ¹² HBr ^h	4-748	Not Reported	Ground					29 345.6	.1
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 1←1, 1	Ground	5/2		3/2		29 345.68	
C ¹² H ₂ Cl ³⁵ C ¹² :C ¹² H	4-991	5, 2, 3←4, 2, 2	Ground					29 345.7	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 0←1, 0	Ground	3/2		3/2		29 345.93	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 0←1, 0	Ground	5/2		3/2		29 346.24	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 0←1, 0	Ground	1/2		1/2		29 346.24	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 0←1, 0	Ground	3/2		5/2		29 346.24	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 0←1, 0	Ground	7/2		5/2		29 346.24	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 0←1, 0	Ground	3/2		1/2		29 346.65	
D ₃ B ¹¹ C ¹² O ¹⁶	4-394	2, 0←1, 0	Ground	5/2		5/2		29 346.65	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	3, 3, 0←3, 2, 1	Ground					29 348.80	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	8, 2, 6←8, 1, 7	Ground	15/2		15/2		29 348.80	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3-362	8, 2, 6←8, 1, 7	Ground	17/2		17/2		29 348.80	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 2, 6← 8, 1, 7	Ground	13/2	13/2			29 350.15	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	8, 2, 6← 8, 1, 7	Ground	19/2	19/2			29 350.15	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	3, 3, 0← 3, 2, 1	Ground					29 350.15	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 351.	.1
C ¹² H ₃ C ¹² H ₂ I ¹²⁷	3- 571	5, 1, 4← 4, 1, 3		15/2	13/2			29 357.16	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						29 358.15	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	4, 0, 4← 3, 0, 3	Ground					29 358.4	.3
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 359.1	
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	8, 3, 6← 8, 3, 5	Ground					29 360.07	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Excited	11/2	9/2			29 361.9	
O ¹⁶ F ¹⁹ ₂	4-1611	23, 2,22←22, 3,19	Ground					29 365.40	.10
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Excited					29 368.86	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Ground	7/2	7/2			29 369.0	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					29 370.43	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					29 371.74	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					29 373.24	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Excited	9/2	7/2			29 373.3	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 376.7	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Excited	7/2	5/2			29 380.1	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	8, 1, 7← 8, 0, 8	Ground					29 380.35	.1
C ¹³ O ¹⁶ F ¹⁹ ₂	4- 212	2, 1, 2← 1, 1, 1	Ground					29 386.69	.10
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	5, 1, 5← 4, 1, 4	Ground					29 389.83	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁷	3- 371	10, 3, 7←10, 2, 8	Ground	21/2	21/2			29 390.91	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁷	3- 371	10, 3, 7←10, 2, 8	Ground	17/2	17/2			29 390.91	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁷	3- 371	10, 3, 7←10, 2, 8	Ground	23/2	23/2			29 390.91	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁷	3- 371	10, 3, 7←10, 2, 8	Ground	19/2	19/2			29 390.91	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	5, 4, 2← 5, 3, 3	Ground					29 391.68	
C ¹² O ¹⁶ F ¹⁹ ₂	4- 211	9, 7, 2← 9, 7, 3	Ground					29 391.88	.10
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Ground	11/2	9/2			29 393.9	
C ¹² H ₂ Cl ³⁷ C ¹² :C ¹² H	4- 992	5, 1, 4← 4, 1, 3	Ground					29 394.	
C ¹² O ¹⁶ F ¹⁹ ₂	4- 211	2, 1, 2← 1, 1, 1	Ground					29 395.71	.10
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁷	3- 371	10, 3, 7←10, 2, 8	Ground	21/2	21/2			29 396.97	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁷	3- 371	10, 3, 7←10, 2, 8	Ground	19/2	19/2			29 396.97	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁷	3- 371	10, 3, 7←10, 2, 8	Ground	17/2	17/2			29 396.97	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁷	3- 371	10, 3, 7←10, 2, 8	Ground	23/2	23/2			29 396.97	.2
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						29 396.99	
C ¹² Cl ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 583	9, , ← 8, ,	Ground					29 400.0	20.
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Ground	5/2	3/2			29 400.1	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Ground					29 400.73	.09
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -E	3- 502	5, 1, 4← 5, 0, 5	Ground					29 401.50	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 403.3	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	4, 2, 3← 3, 2, 2	Ground					29 403.8	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Ground	9/2	7/2			29 405.2	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Ground	7/2	5/2			29 411.9	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 3, 2← 3, 3, 1	Ground	5/2	3/2			29 413.1	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 2, 1← 1, 1, 0	Ground					29 415.18	.04
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 2, 1← 1, 1, 0	Ground					29 416.28	.04
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 416.5	.1
HC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ -A	3- 501	5, 1, 4← 5, 0, 5	Ground					29 417.37	.2
DN ¹⁴ O ₃ ¹⁶	3- 32	2, 1, 2← 1, 1, 1	Ground	1		0		29 417.40	
DN ¹⁴ O ₃ ¹⁶	3- 32	2, 1, 2← 1, 1, 1	Ground	3		2		29 417.40	
DN ¹⁴ O ₃ ¹⁶	3- 32	2, 1, 2← 1, 1, 1	Ground	2		1		29 417.40	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Ground	5/2		5/2		29 417.5	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 418.	5.
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 2, 1← 1, 1, 0	Ground					29 420.63	.04
C ¹² D ₃ C ¹² :C ¹² H	4-1052	2, 1← 1, 1	Ground					29 422.50	.1
C ¹² D ₃ C ¹² :C ¹² H	4-1052	2, 0← 1, 0	Ground					29 422.89	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 3, 2← 3, 3, 1	Ground	9/2		9/2		29 424.3	
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 2, 1← 1, 1, 0	Ground					29 425.84	.04
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					29 430.	20.
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	12, 1,11←12, 1,12	Ground					29 430.02	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 3← 3, 2, 2	Excited	5/2		3/2		29 430.8	
C ¹² D ₃ N ¹⁴ D ₂	3- 262	5, 1, 5← 5, 0, 5	Ground					29 431.36	
C ¹² H ₃ C ¹³ H ₂ C ¹² H ₃	3- 783	5, 1, 4← 5, 0, 5	Ground					29 432.48	.06
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	8, 6, 2← 8, 6, 3	Ground					29 433.64	.10
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	5, 0, 5← 4, 1, 4	Ground					29 433.82	.05
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 433.9	.2
C ¹² DHCl ₂ ³⁵	4- 344	8, 1, 7← 8, 0, 8	Ground					29 434.	5.
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 0, 4← 3, 0, 3	Ground	7/2		7/2		29 434.5	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 2, 5← 7, 1, 6	Ground					29 435.25	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 2, 5← 7, 1, 6	Ground					29 435.50	.1
C ¹² H ₂ DC ¹² :C ¹² D	4-1049	2, 1, 2← 1, 1, 1	Ground					29 436.09	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					29 436.3	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 2, 5← 7, 1, 6	Ground					29 438.42	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	4, 2, 2← 3, 2, 1	Ground	9/2		7/2		29 439.9	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		29 441.7	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		29 444.6	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 3← 3, 2, 2	Excited	11/2		9/2		29 445.3	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	4, 2, 2← 3, 2, 1	Ground	5/2		3/2		29 446.2	.1
C ¹² *DHC ¹² H:C ¹² *H	4-1034	10, 5, 5←10, 5, 6	Ground					29 446.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 451.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 2, 5← 7, 1, 6	Ground					29 452.50	.1
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 4← 6, 1, 5	Ground					29 452.88	.05
D ₂ O ₂ ¹⁶	3- 42	Not Reported						29 453.	3.
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 4← 6, 1, 5	Ground					29 453.41	.05
C ¹³ O ¹⁶ F ₂ ¹⁹	4- 212	2, 0, 2← 1, 0, 1	Ground					29 453.50	.10
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 4← 6, 1, 5	Ground					29 453.93	.05
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						29 454.08	.05
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 3← 3, 2, 2	Ground	5/2		3/2		29 455.0	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	2, 0, 2← 1, 0, 1	Ground					29 455.70	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 3, 2← 3, 3, 1	Ground	11/2	9/2			29 458.2	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 458.4	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 3← 3, 2, 2	Excited					29 460.33	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 463.3	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	7, 5, 2← 7, 5, 3	Ground					29 463.51	.10
C ^b H ₂ C ^b F ^b	4- 333	Not Reported						29 463.66	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 2← 3, 2, 1	Ground	5/2	3/2			29 464.2	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Excited	11/2	9/2			29 466.7	
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						29 467.7	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 468.4	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 3← 3, 2, 2	Ground	11/2	9/2			29 469.1	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Excited	5/2	3/2			29 470.4	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 0, 4← 3, 0, 3	Ground	11/2	9/2			29 470.5	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 0, 4← 3, 0, 3	Ground	9/2	7/2			29 470.5	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Excited					29 472.0	.38
O ¹⁶ F ₂ ¹⁹	4-1611	36, 4,32←37, 3,35	Ground					29 473.73	.10
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 0, 4← 3, 0, 3	Ground					29 473.75	.30
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Excited	9/2	7/2			29 475.9	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	4, 1, 4← 3, 0, 3	Ground					29 478.10	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 2← 3, 2, 1	Ground	11/2	9/2			29 478.2	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Excited	7/2	5/2			29 481.0	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 0, 4← 3, 0, 3	Ground	5/2	3/2			29 482.5	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 0, 4← 3, 0, 3	Ground	7/2	5/2			29 482.5	
Ge ⁷⁴ F ₃ ¹⁹ C ¹³ ⁷	4-1406	7, ← 6,	Ground					29 482.88	.30
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 3← 3, 2, 2	Ground					29 483.16	.09
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	6, 4, 2← 6, 4, 3	Ground					29 483.85	.10
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					29 484.6	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 484.8	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Ground	11/2	9/2			29 485.4	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 3, 2← 3, 3, 1	Ground					29 487.72	.62
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 488.	5.
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Ground	5/2	3/2			29 489.3	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Ground					29 490.94	.13
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	Not Reported	Ground					29 491.6	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 2← 3, 2, 1	Ground					29 492.59	.11
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	2, 1, 2← 1, 0, 1	Ground					29 493.5	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 3← 3, 2, 2	Ground	7/2	5/2			29 494.5	
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Ground	9/2	7/2			29 495.2	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	42,21, ←41,22,	Ground					29 496.35	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	42,21, ←41,22,	Ground					29 496.60	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	5, 3, 2← 5, 3, 3	Ground					29 497.00	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	42,21, ←41,22,	Ground					29 497.04	.1
Ge ⁷² F ₃ ¹⁹ C ¹³ ⁷	4-1404	7, ← 6,	Ground					29 497.57	.30
(C ¹² H ₃) ₃ C ¹³ C ¹³ ⁷	3- 974	5, ← 4,	Ground					29 498.0	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 4← 3, 1, 3	Ground	9/2	9/2			29 498.3	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		3/2		5/2	29 498.52	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					29 499.04	.1
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Ground		7/2		5/2	29 500.3	
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	8, 1, 7← 8, 1, 8	Ground					29 500.67	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 3, 2← 3, 3, 1	Ground		7/2		5/2	29 503.0	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 2← 3, 2, 1	Ground		7/2		5/2	29 504.1	
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 504.3	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	4, 2, 2← 4, 2, 3	Ground					29 504.93	.10
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						29 507.2	.5
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		9/2		7/2	29 507.91	
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		3/2		3/2	29 507.91	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 3← 3, 2, 2	Ground		9/2		7/2	29 508.05	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	3, 1, 2← 3, 0, 3	Ground					29 509.	5.
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	3, 1, 2← 3, 1, 3	Ground					29 509.27	.10
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 509.3	.1
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	3, 2, 2← 3, 0, 3	Ground					29 512.10	.10
Ge ⁷⁰ F ₃ ¹⁹ Cl ³⁷	4-1402	7, ← 6,	Ground					29 512.96	.30
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	4, 3, 2← 4, 1, 3	Ground					29 513.80	.10
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		9/2		9/2	29 516.96	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	5, 4, 2← 5, 2, 3	Ground					29 517.37	.10
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 2, 2← 3, 2, 1	Ground		9/2		7/2	29 517.6	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 517.7	.1
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 517.8	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	4, 2, 2← 3, 2, 1	Ground					29 518.4	.2
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 520.	20.
C ¹² D ₃ N ¹⁴ D ₂	3- 262	5, 1, 5← 5, 0, 5	Ground					29 520.90	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	10, 3, 7←10, 2, 8	Ground		19/2		19/2	29 521.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	10, 3, 7←10, 2, 8	Ground		21/2		21/2	29 521.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	10, 3, 7←10, 2, 8	Ground		17/2		17/2	29 522.04	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	10, 3, 7←10, 2, 8	Ground		23/2		23/2	29 522.04	.2
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	7, 6, 1← 7, 5, 2	Ground					29 522.57	.4
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		5/2		7/2	29 522.64	
S ₂ ³² O ¹⁶	4-1821	3, 1, 2← 2, 1, 1	Ground					29 522.8	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	6, 5, 2← 6, 3, 3	Ground					29 523.74	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					29 526.2	.1
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		5/2		5/2	29 526.69	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 4← 3, 1, 3	Ground		9/2		9/2	29 527.1	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	10, 3, 7←10, 2, 8	Ground		21/2		21/2	29 527.40	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	10, 3, 7←10, 2, 8	Ground		19/2		19/2	29 527.40	.2
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 1, 4← 3, 1, 3	Ground					29 527.6	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	10, 3, 7←10, 2, 8	Ground		23/2		23/2	29 528.13	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	10, 3, 7←10, 2, 8	Ground		17/2		17/2	29 528.13	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	18, 8, ←17, 9,	Ground					29 530.32	.1
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	10, 2, 8←10, 2, 9	Ground					29 530.95	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	18, 8, ←17, 9,	Ground					29 531.24	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	10, 2, 8←10, 2, 9	Ground					29 532.75	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 533.	5.
O ¹⁶ F ₂ ¹⁹	4-1611	19, 5, 14←20, 4, 17	Ground					29 533.85	.10
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	7, 6, 2← 7, 4, 3	Ground					29 533.95	.10
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 535.	20.
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 4← 3, 1, 3	Ground		7/2	5/2		29 535.1	.1
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		5/2	3/2		29 535.30	
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		7/2	7/2		29 535.30	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 4← 3, 1, 3	Ground		9/2	7/2		29 535.6	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁷	3- 972	5, ← 4,	Ground					29 535.6	.3
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 3, 2← 3, 3, 1	Ground		5/2	5/2		29 536.3	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 4← 3, 1, 3	Ground		5/2	3/2		29 536.4	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 4← 3, 1, 3	Ground		11/2	9/2		29 536.9	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 4← 3, 1, 3	Ground		7/2	7/2		29 539.1	.1
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		7/2	5/2		29 539.38	
C ¹² H ₃ N ¹⁴ C ¹² S ³⁴	3- 425	6, , ← 5, ,	Ground					29 540.	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 540.	20.
C ^b H ₃ C ^b H ₂ Cl ³⁵	3- 548	Not Reported						29 544.1	.05
As ⁷⁵ H ₂ D	4- 32	3, 1, 3← 3, 0, 3	Ground		7/2	9/2		29 545.05	
C ¹² H ₂ DC ¹² :C ¹² D	4-1049	2, 0, 2← 1, 0, 1	Ground					29 545.33	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 4← 3, 1, 3	Ground		5/2	5/2		29 545.4	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 3, 2← 3, 3, 1	Ground		9/2	7/2		29 547.2	
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	8, 1, 7← 8, 1, 8	Ground					29 548.31	.2
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	8, 7, 2← 8, 5, 3	Ground					29 549.17	.10
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	7, 2, 6← 7, 2, 5	Ground					29 549.49	
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	2, 2, 1← 1, 1, 0	Ground					29 549.8	.1
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 550.	20.
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	Not Reported						29 550.43	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 550.6	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 191	7, 2, 6← 7, 2, 5	Ground					29 552.40	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 554.05	.1
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 555.	20.
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 3, 2← 3, 3, 1	Ground		7/2	7/2		29 558.3	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 560.	20.
a-(C ¹² H ₂ D)(C ¹² H ₃) ₂ C ¹² H	3-1006	2, 1, 1← 1, 0, 1						29 560.45	.05
c-C ¹² HD:C ¹² DBr ⁸¹	4- 746	4, 1, 3← 3, 1, 2	Ground		9/2	9/2		29 567.4	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 0, 4← 3, 0, 3	Ground		9/2	9/2		29 569.0	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 3, 2← 3, 3, 1	Ground		5/2	3/2		29 570.4	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	9, 8, 2← 9, 6, 3	Ground					29 570.75	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					29 572.23	
C ¹² H ₃ Si ³⁰ HF ₂ ¹⁹	3- 194	3, 2, 2← 2, 2, 1	Ground					29 573.50	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					29 574.4	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 1, 4← 3, 1, 3	Ground					29 576.65	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Ground		5/2	5/2		29 580.5	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² D ₃ N ¹⁴ D ₂	3- 262	5, 1, 5← 5, 0, 5	Ground		29 581.31	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 3, 2← 3, 3, 1	Ground	9/2 9/2	29 581.8	
C ¹² H ₂ Cl ₂ ³⁵	4- 341	3, 1, 2← 3, 0, 3	Ground		29 582.0	.3
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		29 582.3	.1
HC ¹² N ¹⁴	4- 291	11←11	Excited		29 585.12	.20
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		29 586.0	.1
C ¹² Cl ₃ F ¹⁹	4- 191	6, ← 5,	Ground		29 588.95	.01
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground		29 590.	20.
C ¹² HD:C ¹² HBr ^h	4- 748	Not Reported	Ground		29 591.9	.1
C ¹² H ₃ C ¹² H ₂ C ¹² H ₃	3- 781	5, 1, 4← 5, 0, 5	Ground		29 592.51	.03
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		29 593.1	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Excited	5/2 3/2	29 596.0	
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground	5/2 3/2	29 598.95	.08
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 0, 4← 3, 0, 3	Ground	7/2 7/2	29 599.2	
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	5, 1, 5← 4, 1, 4	Ground	7/2 9/2 5/2 7/2	29 599.25	.05
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	5, 1, 5← 4, 1, 4	Ground	11/2 13/2 9/2 11/2	29 599.25	.05
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground		29 599.3	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	5, 1, 5← 4, 1, 4	Ground		29 599.32	.2
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground		29 600.	20.
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	10, 9, 2←10, 7, 3	Ground		29 600.24	.10
C ¹² H ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	3, 2, 2← 2, 2, 1	Ground		29 600.40	
C ¹² D ₃ Si ^h HD ₂	3- 331	14, 1,13←14, 1,14			29 600.50	1.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		29 604.65	.1
C ¹³ *H:C ¹² HO ¹⁶ C ¹² H:C ¹² *H	4-1157	12, 9, 3←12, 8, 4	Ground		29 605.5	.1
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹³ D	3-1075	6, ← 5,	Ground		29 610.2	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Excited	11/2 9/2	29 612.6	
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	12, 1,11←12, 0,12	Ground		29 613.69	.2
C ¹² HD:C ¹² HBr ^h	4- 748	Not Reported	Ground		29 616.0	.1
N ¹⁴ O ¹⁶ Br ^h	4- 123	4, , ← 3, ,			29 618.2	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Ground	5/2 3/2	29 620.3	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 3, 2← 3, 3, 1	Ground	11/2 9/2	29 622.9	
C ¹² HD:C ¹² DBr ^h	4- 749	Not Reported	Ground		29 623.3	.2
C ¹² H ₂ F ₂ ¹⁹	4- 351	19, 4,16←18, 5,13	Ground		29 624.66	.10
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	Not Reported	Ground		29 625.6	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	5, 1, 5← 4, 1, 4	Ground		29 625.73	.2
C ¹² HD:C ¹² HBr ^h	4- 748	Not Reported	Ground		29 627.0	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .E	3- 192	3, 2, 2← 2, 2, 1	Ground		29 627.82	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	3, 2, 2← 2, 2, 1	Ground		29 627.82	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 1, 5← 4, 0, 4	Ground	11/2 9/2	29 628.40	.15
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 2← 3, 2, 1	Ground	5/2 3/2	29 629.2	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Excited		29 629.81	.07
s-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 183	4, 0, 4← 3, 0, 3	Ground		29 629.85	.1
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground		29 630.	20.
C ¹² HD:C ¹² HBr ^h	4- 748	Not Reported	Ground		29 630.1	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ F ₂ ¹⁹	4- 351	19, 6, 13←20, 5, 16	Ground					29 630.87	.10
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 1, 4← 3, 1, 3	Ground					29 633.65	.1
(C ¹² H ₃) ₂ O ¹⁸	3- 595	1, 1, 0← 1, 0, 1	Excited					29 635.	20.
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Ground	11/2		9/2		29 636.9	
C ¹² H ₃ O ¹⁶ H	3- 211	16, 2, ←16, 1,	Ground					29 636.91	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 1, 4← 3, 1, 3	Ground					29 637.	2.
C ¹² H ₃ B ¹⁰ F ₂ ¹⁹	3- 91	2, , ← 1, ,	Ground					29 637.6	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 1, 4← 3, 1, 3	Ground					29 638.0	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 1, 5← 4, 0, 4	Ground	9/2		7/2		29 638.95	.15
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	11, 10, 2←11, 8, 3	Ground					29 639.29	.10
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Ground	7/2		7/2		29 639.7	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 0, 4← 3, 0, 3	Ground	11/2		9/2		29 640.5	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 0, 4← 3, 0, 3	Ground	9/2		7/2		29 640.5	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Excited	11/2		9/2		29 642.6	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Excited	7/2		5/2		29 643.5	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 0, 4← 3, 0, 3	Ground					29 644.39	.24
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 1, 5← 4, 0, 4	Ground	13/2		11/2		29 644.39	.15
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		29 646.5	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Excited	5/2		3/2		29 648.0	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Excited					29 649.35	.16
HC ¹² N ¹⁴	4- 291	11←11	Excited					29 650.	30.
DC ¹² : C ¹² C ¹² DO ¹⁶	4- 926	1, 1, 1← 2, 0, 2	Ground					29 650.85	.02
C ¹² H ₂ DC ¹² : C ¹² D	4-1049	2, 1, 1← 1, 1, 0	Ground					29 653.70	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Ground					29 654.06	.06
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Excited	9/2		7/2		29 654.2	
C ¹² *D ₂ S ³² C ¹² *D ₂	4- 853	2, 1, 2← 1, 1, 1	Ground					29 654.6	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 0, 4← 3, 0, 3	Ground	5/2		3/2		29 654.8	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 0, 4← 3, 0, 3	Ground	7/2		5/2		29 654.8	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					29 654.8	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	5, 1, 5← 4, 0, 4	Ground	7/2		5/2		29 655.20	.15
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 656.06	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 3, 2← 3, 3, 1	Ground					29 657.76	.42
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 657.8	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						29 658.40	.1
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 659.06	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Excited	9/2		7/2		29 659.8	
(C ¹² H ₃) ₂ O ¹⁸	3- 595	1, 1, 0← 1, 0, 1	Excited					29 660.	20.
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Excited	7/2		5/2		29 660.2	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Ground	11/2		9/2		29 662.0	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					29 662.4	.1
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	6, 1, 6← 6, 1, 5	Ground					29 662.8	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	6, 3, 3← 6, 2, 4	Ground					29 663.01	.05
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 2← 3, 2, 1	Ground					29 663.22	.19
N ¹⁴ O ¹⁶ Br ^b	4- 123	4, , ← 3, ,						29 664.0	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Ground	5/2		3/2		29 667.2	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Ground	7/2	5/2			29 667.3	
C ¹² D ₂ Cl ₃ ³⁵	4- 346	10, 1, 9←10, 0,10	Ground					29 667.7	.2
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	6, 1, 6← 6, 1, 5	Ground					29 667.8	
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Ground					29 668.64	.16
Si ²⁸ HCl ₃ ³⁵	4-1501	6, ← 5,	Ground					29 669.87	.5
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Ground	9/2	7/2			29 673.4	
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground	7/2	7/2			29 673.95	.08
(C ¹² H ₃) ₂ O ¹⁸	3- 595	2, 1, 1← 2, 0, 2	Ground					29 674.3	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 3, 2← 3, 3, 1	Ground	7/2	5/2			29 675.4	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 2← 3, 2, 1	Ground	7/2	5/2			29 676.6	
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	3, 0, 3← 2, 1, 2	Ground					29 678.4	.1
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Ground	7/2	5/2			29 679.7	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 680.	20.
C ¹² H ₃ C ¹³ H ₂ Cl ₃ ³⁵	3- 546	5, 1, 4← 5, 0, 5	Ground	7/2	7/2			29 682.75	.05
C ¹² H ₃ C ¹³ H ₂ Cl ₃ ³⁵	3- 546	5, 1, 4← 5, 0, 5	Ground	13/2	13/2			29 683.97	.05
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 3← 3, 2, 2	Ground	9/2	7/2			29 684.2	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					29 684.32	.1
C ¹² *H ₂ C ¹² H:C ¹² HC ¹² H:C ¹² *H	4-1231	3, 1, 3← 2, 0, 2	Ground					29 686.2	.1
C ¹² H ₃ C ¹³ H ₂ Cl ₃ ³⁵	3- 546	5, 1, 4← 5, 0, 5	Ground	9/2	9/2			29 686.99	.05
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	5, 4, 1← 5, 3, 2	Ground					29 688.	1.
C ¹² H ₃ C ¹³ H ₂ Cl ₃ ³⁵	3- 546	5, 1, 4← 5, 0, 5	Ground	11/2	11/2			29 688.18	.05
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 689.70	
C ¹² O ¹⁶ F ₂ ¹⁹	4- 211	12,11, 2←12, 9, 3	Ground					29 689.77	.10
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 690.07	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 2, 2← 3, 2, 1	Ground	9/2	7/2			29 693.25	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 693.3	.1
(C ¹² H ₃) ₂ O ¹⁸	3- 595	1, 1, 0← 1, 0, 1	Excited					29 695.	20.
C ¹² Cl ₃ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	9, , ← 8, ,	Ground					29 695.1	1.0
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	Not Reported	Ground					29 695.6	
C ¹² HDCl ₃ ³⁵ Si ²⁸ H ₃	3- 236	5, 1, 5← 4, 1, 4	Ground					29 696.89	.2
C ¹² H ₃ N ¹⁴ C ¹² S ³⁴	3- 425	6, , ← 5, ,	Ground					29 700.	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 704.12	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 704.70	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 708.9	.1
(C ¹² H ₃) ₂ O ¹⁸	3- 595	1, 1, 0← 1, 0, 1	Excited					29 710.	20.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	11,10, 2←11, 8, 3	Excited					29 717.5	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	7, 1, 6← 7, 1, 7	Ground					29 718.83	.3
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 719.	.1
(C ¹² H ₃) ₂ O ¹⁸	3- 595	1, 1, 0← 1, 0, 1	Excited					29 720.	20.
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 724.87	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Ground					29 724.99	.1
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	3, 1, 3← 2, 1, 2	Ground					29 727.20	.2
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 729.13	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 3, 2← 3, 3, 1	Ground	9/2	7/2			29 729.8	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 730.	20.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 2, 7← 9, 1, 8	Ground					29 730.32	.1
C ¹² H ₃ I ¹²⁷	4- 481	2, 1← 1, 1	Ground		7/2		5/2	29 735.71	.08
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 2, 7← 9, 1, 8	Ground					29 740.80	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 3, 2← 3, 3, 1	Ground		7/2		7/2	29 743.7	
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² Cl ³⁵	3- 975	5, 1, 5← 4, 1, 4	Ground					29 747.06	.20
C ¹² DBr ⁷⁹	4- 243	12, ←11,	Ground					29 747.2	.5
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	7, 6, 2← 7, 4, 3	Ground					29 751.	5.
D ₂ O ₂ ¹⁶	3- 42	Not Reported						29 759.	3.
c-C ¹² HD:C ¹² DBr ⁷⁹	4- 744	4, 1, 3← 3, 1, 2	Ground		9/2		9/2	29 760.1	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	4, ← 3,	Excited					29 764.24	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 2, 7← 9, 1, 8	Ground					29 764.80	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 2, 7← 9, 1, 8	Ground					29 765.05	.1
s-(C ¹² H ₂ D)(C ¹² H ₃) ₂ C ¹² H	3-1005	2, 1, 1← 1, 0, 1						29 765.6	1.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 1, 4← 3, 1, 3	Ground					29 765.97	.1
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	3, 0, 3← 2, 0, 2	Ground					29 766.45	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					29 770.2	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	6, 1, ← 5, 2,	Ground					29 771.4	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					29 771.40	
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	3, 2, 2← 2, 2, 1	Ground					29 771.66	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					29 772.81	
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground		5/2		7/2	29 773.95	.08
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	7, 1, 6← 7, 1, 7	Ground					29 774.15	.2
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	3, 2, 1← 2, 2, 0	Ground					29 776.39	.2
C ¹² H ₃ I ¹²⁷	4- 481	2, 1← 1, 1	Ground		5/2		5/2	29 782.71	.08
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	7, 6, 2← 7, 4, 3	Excited					29 783.0	.1
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 783.9	.1
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 1, 1← 2, 0, 2	Ground					29 784.	10.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 785.	5.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 1, 4← 3, 1, 3	Ground					29 785.75	.1
a-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 204	3, 1, 2← 2, 1, 1	Ground					29 787.24	2.
Si ²⁸ H ₃ C ¹² H:C ¹² H ₂	3- 611	2, 1, 1← 2, 0, 2	Ground					29 789.	10.
a-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 204	3, 1, 2← 2, 1, 1	Ground					29 789.34	2.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					29 797.36	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						29 801.69	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					29 804.6	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						29 807.10	.1
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	3, 1, 2← 2, 1, 1	Ground					29 814.08	.2
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 815.1	.1
C ¹² D ₃ N ¹⁴ D ₂	3- 262	5, 1, 5← 5, 0, 5	Ground					29 817.76	
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	11, 4, 7←11, 3, 8	Ground		19/2		19/2	29 817.85	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	11, 4, 7←11, 3, 8	Ground		25/2		25/2	29 817.85	.2
HDO ₂ ¹⁶	3- 43	15, , ←15, ,						29 818.	3.
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	11, 4, 7←11, 3, 8	Ground		21/2		21/2	29 819.00	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	11, 4, 7←11, 3, 8	Ground		23/2		23/2	29 819.00	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	11, 4, 7←11, 3, 8	Ground		19/2		19/2	29 820.30	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	11, 4, 7←11, 3, 8	Ground	25/2		25/2		29 820.30	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	11, 4, 7←11, 3, 8	Ground	21/2		21/2		29 821.40	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	11, 4, 7←11, 3, 8	Ground	23/2		23/2		29 821.40	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	11, 4, 7←11, 3, 8	Ground	21/2		21/2		29 821.40	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	11, 4, 7←11, 3, 8	Ground	23/2		23/2		29 821.40	.2
S ³² P ³¹ Cl ₃ ⁷	4-1534	11, ←10,	Ground					29 825.5	1.0
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .E	3- 702	3, 0, 3← 2, 0, 2						29 826.39	.2
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² Cl ³⁵	3- 975	5, 0, 5← 4, 0, 4	Ground					29 827.79	.20
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .A	3- 701	3, 0, 3← 2, 0, 2						29 829.55	.2
HDO ₂ ⁶	3- 43	15, , ←15, ,						29 830.	3.
C ^b _* H ^b ₂ N ^b H ^b C ^b _* H ^b ₂	4- 863	Not Reported						29 830.	10.
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						29 832.	
P ³¹ H ₃ ^b	4-1785	Not Reported						29 833.95	.05
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 835.	20.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 841.	5.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 850.	20.
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	12, 1,11←11, 2,10	Ground					29 854.	1.0
Si ²⁹ D ₂ F ₂ ¹⁹	4-1604	6, 2, 4← 6, 1, 5	Ground					29 859.10	.10
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground	3/2		3/2		29 872.52	.08
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						29 878.60	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 880.	20.
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 880.	20.
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	5, 0, 5← 4, 0, 4	Ground					29 883.72	.2
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	17, 2,16←16, 3,13	Ground					29 889.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					29 889.33	.1
C ¹² _* H ^b ₂ S ^b C ¹² _* H ^b ₂	4- 854	Not Reported						29 890.0	25.
C ¹² _* H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ _*	4-1091	11,10, 2←11, 8, 3	Excited					29 893.2	.1
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	3, 0, 3← 2, 1, 2	Excited					29 894.05	.10
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					29 895.	20.
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	5, 1, 5← 4, 1, 4	Ground					29 895.95	.2
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Ground					29 901.4	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 904.9	.2
C ¹² H ₂ Cl ₂ ³⁷	4- 343	4, 1, 3← 4, 0, 4	Ground					29 905.	5.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 905.9	.2
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	14,12, 2←14,11, 3	Ground					29 909.89	.05
C ¹² _* H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ _*	4-1093	9, 6, 3← 9, 6, 4	Excited					29 910.5	.1
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	14,12, 2←14,11, 3	Ground					29 910.98	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	14,12, 2←14,11, 3	Ground					29 911.02	
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ .A	3- 197	Not Reported	Ground					29 911.8	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						29 913.2	.5
N ¹⁴ H ₃	4-1771	11,11←11,11	Ground					29 914.66	.10
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 5← 4, 1, 4	Ground					29 915.57	.2
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 3← 3, 1, 2	Ground	5/2		5/2		29 916.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						29 918.	5.
DC ¹² O ¹⁶ O ¹⁶ C ¹² H ₃ .E	3- 504	5, 1, 4← 5, 0, 5	Ground					29 921.44	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	3, 0, 3← 2, 1, 2						29 922.74	.2
HDO ₂ ¹⁶	3- 43	11, , ←11, ,						29 923.	3.
C ¹² H ₃ I ¹²⁷	4- 481	2, 1← 1, 1	Ground	3/2		5/2		29 923.50	.08
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	4, 0, 4← 3, 1, 3						29 923.74	.2
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	5, 0, 5← 4, 0, 4	Ground					29 923.80	.2
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						29 924.0	.5
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 925.4	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						29 925.4	1.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						29 926.	1.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 4← 3, 1, 3	Ground	5/2		5/2		29 926.4	
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² Cl ³⁵	3- 975	5, 1, 4← 4, 1, 3	Ground					29 929.33	.20
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 931.	5.
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 3, 1← 3, 2, 1	Ground	3/2		3/2		29 931.86	
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	10, 3, 7←10, 2, 8	Ground	19/2		19/2		29 932.42	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	10, 3, 7←10, 2, 8	Ground	17/2		17/2		29 932.42	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	10, 3, 7←10, 2, 8	Ground	23/2		23/2		29 932.42	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	10, 3, 7←10, 2, 8	Ground	21/2		21/2		29 932.42	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁷	4-1082	4, 1, 3← 3, 1, 2	Ground					29 935.1	
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	5, 1, 5← 4, 1, 4	Ground	7/2	9/2	5/2	7/2	29 935.7	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	5, 1, 5← 4, 1, 4	Ground					29 936.02	.2
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	5, 1, 5← 4, 1, 4	Ground	11/2	13/2	9/2	11/2	29 936.2	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 937.	5.
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	10, 3, 7←10, 2, 8	Ground	17/2		17/2		29 938.48	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	10, 3, 7←10, 2, 8	Ground	23/2		23/2		29 938.48	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	10, 3, 7←10, 2, 8	Ground	19/2		19/2		29 938.48	.2
C ¹³ H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 368	10, 3, 7←10, 2, 8	Ground	21/2		21/2		29 938.48	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 3, 1← 3, 2, 1	Ground	9/2		9/2		29 939.30	
C ¹² H ₃ I ¹²⁷	4- 481	2, 1← 1, 1	Ground	7/2		7/2		29 939.87	.08
(C ¹³ H ₃)(C ¹² H ₃)O ¹⁶	3- 594	1, 1, 0← 1, 0, 1	Ground					29 942.1	.2
C ¹² HBr ₃ ⁷⁹	4- 241	12, ←11,	Ground					29 942.7	.5
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 3← 3, 1, 2	Excited	7/2		7/2		29 944.4	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 3, 1← 3, 2, 1	Ground					29 944.7	.3
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 946.2	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 3, 1← 3, 2, 1	Ground	5/2		5/2		29 948.23	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					29 950.	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 951.2	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 3, 2← 3, 3, 1	Ground	5/2		3/2		29 952.5	
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	5, 0, 5← 4, 0, 4	Ground					29 954.65	.2
C ¹³ H ₃ O ¹⁶ H	3- 213	14, 2, ←14, 1,	Ground					29 955.72	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 3, 1← 3, 2, 1	Ground	7/2		7/2		29 955.81	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 957.6	1.
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 3← 3, 2, 2	Excited	5/2		3/2		29 960.0	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						29 962.	3.
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 3← 3, 1, 2	Excited	11/2		9/2		29 962.3	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 3, 2← 3, 3, 1	Ground	9/2		9/2		29 963.8	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Ground	7/2	7/2			29 964.0	
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	6, 3, 3← 6, 3, 4	Ground					29 965.25	.2
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Excited	5/2	3/2			29 966.5	
s-C ¹² H ₂ DSi ²⁸ HF ¹⁹	3- 203	3, 1, 2← 2, 1, 1	Ground					29 966.89	2.
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Excited					29 967.75	.12
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 970.1	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 971.1	1.
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Excited	9/2	7/2			29 971.9	
C ¹² H ₃ O ¹⁶ H	3- 211	23, 2, ←23, 1,	Ground					29 973.06	.1
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 2, 3← 3, 2, 2	Excited	11/2	9/2			29 974.3	
F ¹⁹ Cl ³⁷	1-	1← 0	Excited	3/2	3/2			29 974.470	0.069
c-C ¹² HD:C ¹² HBr ^{s1}	4- 742	4, 1, 4← 3, 1, 3	Excited	5/2	3/2			29 975.7	
c-C ¹² HD:C ¹² HBr ^{s1}	4- 742	4, 1, 4← 3, 1, 3	Excited					29 975.83	
c-C ¹² HD:C ¹² HBr ^{s1}	4- 742	4, 1, 4← 3, 1, 3	Ground	7/2	7/2			29 976.5	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 976.5	1.
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	6, 3, 3← 6, 3, 4	Ground					29 979.27	.2
c-C ¹² HD:C ¹² HBr ^{s1}	4- 742	4, 1, 4← 3, 1, 3	Excited	9/2	7/2			29 979.45	
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 0, 4← 3, 0, 3	Ground	11/2	9/2			29 979.6	
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 0, 4← 3, 0, 3	Ground	9/2	7/2			29 979.6	
Cl ³⁵ O ¹⁶	4-1484	9, 0, 9← 8, 1, 8	Ground					29 980.5	
Cl ³⁷ O ¹⁶	4-1484	9, 0, 9← 8, 1, 8	Ground					29 982.10	
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Ground	11/2	9/2			29 982.2	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					29 982.2	.1
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 0, 4← 3, 0, 3	Ground					29 982.50	
Cl ³⁵ O ¹⁶	4-1484	9, 0, 9← 8, 1, 8	Ground					29 983.12	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						29 984.	3.
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Ground	5/2	3/2			29 986.65	
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 2, 3← 3, 2, 2	Ground	5/2	3/2			29 986.7	
C ¹² H ₃ I ¹²⁷	4- 481	2, 1← 1, 1	Ground	5/2	7/2			29 986.84	.08
Cl ³⁵ O ¹⁶	4-1484	9, 0, 9← 8, 1, 8	Ground					29 987.0	
Cl ³⁷ O ¹⁶	4-1484	9, 0, 9← 8, 1, 8	Ground					29 987.5	
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 2, 3← 3, 2, 2	Excited					29 987.70	.4
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Ground					29 987.78	.05
Cl ³⁵ O ¹⁶	4-1484	9, 0, 9← 8, 1, 8	Ground					29 989.38	
C ¹² H ₂ (C ¹² N ¹⁴) ₂	4- 901	Not Reported	Ground					29 990.3	.1
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 0, 4← 3, 0, 3	Ground	7/2	5/2			29 990.7	
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 0, 4← 3, 0, 3	Ground	5/2	3/2			29 990.7	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 0← 1, 0, 1	Excited					29 990.8	1.
Cl ³⁵ O ¹⁶	4-1484	9, 0, 9← 8, 1, 8	Ground					29 991.62	
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Ground	9/2	7/2			29 991.85	
Cl ³⁷ O ¹⁶	4-1484	9, 0, 9← 8, 1, 8	Ground					29 992.70	
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 3, 2← 3, 3, 1	Ground	11/2	9/2			29 995.9	
t-C ¹² HD:C ¹² HBr ^{s1}	4- 743	4, 1, 3← 3, 1, 2	Ground	7/2	5/2			29 996.6	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						29 997.2	1.
t-C ¹² HD:C ¹² DBr ^{s1}	4- 747	4, 2, 3← 3, 2, 2	Excited	7/2	5/2			29 997.9	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 4← 3, 1, 3	Ground	11/2	9/2			29 998.0	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 3← 3, 2, 2	Ground	11/2	9/2			30 000.7	
F ¹⁹ Cl ³⁷	1-	1← 0	Excited	5/2	3/2			30 003.218	0.069
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 4← 3, 1, 3	Ground	5/2	3/2			30 003.3	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 4← 3, 1, 3	Ground					30 003.58	.09
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	1, 1, 0← 1, 0, 1	Ground					30 003.6	.2
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	4, 1, 3← 4, 0, 4	Ground					30 005.	5.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 4← 3, 1, 3	Ground	9/2	7/2			30 007.4	
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	11, 6, 5←11, 5, 6	Ground					30 008.04	
C ¹² HD:C ¹² DBr ^h	4- 749	Not Reported	Ground					30 009.0	.1
C ¹² Cl ³⁵ C ¹² N ¹⁴	4- 581	9, ← 8,	Ground					30 009.2	1.0
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						30 010.5	.5
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² D	3-1078	6, 1, 6← 5, 1, 5	Ground					30 012.2	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 4← 3, 1, 3	Ground	7/2	5/2			30 013.0	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 3← 3, 2, 2	Excited	9/2	7/2			30 013.1	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 3← 3, 2, 2	Ground					30 014.77	.07
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	5, 1, 4← 5, 0, 5	Ground	7/2	7/2			30 015.11	.05
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	5, 1, 4← 5, 0, 5	Ground	13/2	13/2			30 016.32	.05
HC ¹² *:C ¹² HO ¹⁶ C ¹² O ¹⁶ O ¹⁶ *	4- 931	4, 2, 2← 3, 2, 1	Ground					30 019.22	.10
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	5, 1, 4← 5, 0, 5	Ground	9/2	9/2			30 019.42	.05
C ¹³ H ₃ C ¹² H ₂ Cl ³⁵	3- 545	5, 1, 4← 5, 0, 5	Ground	11/2	11/2			30 020.68	.05
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 2← 3, 2, 1	Ground	5/2	3/2			30 021.1	
S ³² O ¹⁶ F ¹⁹	4-1621	2, 1, 1← 1, 1, 0	Ground					30 023.90	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 3, 2← 3, 3, 1	Ground					30 025.14	.23
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					30 025.9	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 3← 3, 2, 2	Ground	7/2	5/2			30 026.0	
F ¹⁹ Cl ³⁷	1-	1← 0	Excited	1/2	3/2			30 026.195	0.069
C ¹² Cl ³⁵ C ¹² N ¹⁴	4- 581	9, ← 8,	Excited					30 027.4	1.0
s-(C ¹² H ₂ D)(C ¹² H ₃) ₂ C ¹² H	3-1005	2, 2, 0← 1, 1, 0						30 031.28	.10
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 5← 4, 1, 4	Ground					30 032.34	.2
C ¹² Cl ³⁵ C ¹² N ¹⁴	4- 581	9, ← 8,	Excited					30 035.0	1.0
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 2← 3, 2, 1	Ground	11/2	9/2			30 035.1	
C ¹² HD:C ¹² HBr ^h	4- 748	Not Reported	Ground					30 035.65	.1
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	2, 0, ← 1, 0,	Ground					30 037.2	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 2, 4← 6, 1, 5	Ground					30 038.11	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 2, 4← 6, 1, 5	Ground					30 038.37	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 3← 3, 2, 2	Ground	9/2	7/2			30 039.6	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	11,10, 2←11, 8, 3	Excited					30 040.8	.1
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	1, 1, 1← 0, 0, 0	Ground					30 042.2	.2
C ¹² HD:C ¹² HBr ^h	4- 748	Not Reported	Ground					30 044.7	.1
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground	9/2	7/2			30 046.99	.08
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	5, 1, 4← 5, 0, 5	Ground	7/2	7/2			30 048.54	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 2, 4← 6, 1, 5	Ground					30 048.77	.1
Si ²⁹ D ₂ F ¹⁹	4-1604	5, 2, 3← 5, 1, 4	Ground					30 049.00	.10
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 2← 3, 2, 1	Ground					30 049.17	.07

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	5, 1, 4← 5, 0, 5	Ground	13/2	13/2			30 049.65	.05
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 0, 4← 3, 0, 3	Ground	5/2	5/2			30 050.8	
O ₃ ¹⁶	4-1841	15, 3,13←16, 2,14	Ground					30 052.	
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	5, 1, 4← 5, 0, 5	Ground	9/2	9/2			30 052.73	.05
t-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 543	5, 1, 4← 5, 0, 5	Ground	11/2	11/2			30 053.86	.05
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 2, 3← 3, 2, 2	Ground					30 056.33	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						30 057.2	.5
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 2← 3, 2, 1	Ground	7/2	5/2			30 060.4	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 2, 3← 3, 2, 2	Ground					30 060.63	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	4, 1, 3← 3, 1, 2	Ground	9/2	9/2			30 062.2	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 3, 1← 3, 3, 0	Ground					30 063.60	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 3, 2← 3, 3, 1	Ground					30 063.60	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	6, 2, 4← 6, 1, 5	Ground					30 064.48	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	11, 4, 7←11, 3, 8	Ground	21/2	21/2			30 068.48	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	11, 4, 7←11, 3, 8	Ground	23/2	23/2			30 068.48	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	11, 4, 7←11, 3, 8	Ground	19/2	19/2			30 069.05	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁷	3- 362	11, 4, 7←11, 3, 8	Ground	25/2	25/2			30 069.05	.2
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	3, 0, 3← 2, 1, 2	Ground					30 069.60	.10
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	Not Reported						30 070.	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 2, 2← 3, 2, 1	Ground					30 071.05	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 2, 2← 3, 2, 1	Ground	9/2	7/2			30 074.0	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 075.	5.
C ¹² H ₃ I ¹²⁷	4- 481	2, 1← 1, 1	Ground	5/2	3/2			30 075.08	.08
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 2, 2← 3, 2, 1	Ground					30 075.50	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Ground	5/2	5/2			30 078.9	
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground	7/2	5/2			30 079.72	.08
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 0, 4← 3, 0, 3	Ground					30 081.20	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Ground	5/2	5/2			30 081.8	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 083.34	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 4← 3, 1, 3	Ground	9/2	9/2			30 084.65	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 3, 2← 3, 3, 1	Ground	9/2	7/2			30 084.8	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					30 088.5	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 3, 2← 3, 3, 1	Ground	7/2	7/2			30 096.9	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	11, 1,10←11, 0,11	Ground					30 098.56	.2
C ^b H ₂ ^b Cl ^b F ^b	4- 333	Not Reported						30 100.	1.
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 2, 3← 3, 2, 2	Ground	9/2	7/2			30 104.3	.1
C ¹² H ₂ Cl ₂ ³⁵	4- 341	4, 1, 3← 4, 0, 4	Ground					30 105.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 105.	5.
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 105.4	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 2, 3← 3, 2, 2	Ground	7/2	5/2			30 106.2	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 2, 3← 3, 2, 2	Ground	11/2	9/2			30 109.8	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 2← 3, 3, 1	Ground	7/2	7/2			30 112.0	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 2, 3← 3, 2, 2	Ground	5/2	3/2			30 112.0	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 1← 3, 3, 0	Ground	7/2	7/2			30 112.0	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 2← 3, 3, 1	Ground	9/2	7/2			30 113.5	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 1← 3, 3, 0	Ground	5/2	5/2	30	113.5	.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 1← 3, 3, 0	Ground	9/2	7/2	30	113.5	.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 2← 3, 3, 1	Ground	5/2	5/2	30	113.5	.1	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 0, 4← 3, 0, 3	Ground	7/2	7/2	30	115.2		
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground			30	116.9	.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 2← 3, 3, 1	Ground	7/2	5/2	30	118.8	.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 1← 3, 3, 0	Ground	7/2	5/2	30	118.8	.1	
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 1← 1, 1	Ground	1	2	30	119.91		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 1← 1, 1	Ground	5	4	30	120.21		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 1← 1, 1	Ground	2	2	30	120.21		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 1← 1, 1	Ground	3	4	30	120.56		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 1← 1, 1	Ground	2	3	30	120.56		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 1← 1, 1	Ground	4	4	30	120.56		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 1← 1, 1	Ground	4	3	30	120.86		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 1← 1, 1	Ground	3	3	30	120.86		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	2	3	30	120.86		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	5	4	30	121.21		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	4	3	30	121.21		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	3	3	30	121.21		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	1	2	30	121.21		
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground	1/2	3/2	30	121.32	.08	
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	2	2	30	121.56		
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground			30	121.6	.1	
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	4	4	30	121.86		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	3	4	30	121.86		
D ₃ B ¹⁰ C ¹² O ¹⁶	4- 393	2, 0← 1, 0	Ground	3	2	30	121.86		
C ¹² H ₃ I ¹²⁷	4- 481	2, 1← 1, 1	Ground	9/2	7/2	30	123.64	.08	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 2← 3, 3, 1	Ground	11/2	9/2	30	124.9	.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 1← 3, 3, 0	Ground	11/2	9/2	30	124.9	.1	
C ¹³ H ₃ O ¹⁶ H	3- 213	25, 2, ←25, 1,	Ground			30	127.80	.1	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 3, 2← 3, 3, 1	Ground	9/2	9/2	30	128.7		
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Excited	11/2	9/2	30	129.6		
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 1← 3, 3, 0	Ground	9/2	9/2	30	131.6	.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 2← 3, 3, 1	Ground	9/2	9/2	30	131.6	.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 2← 3, 3, 1	Ground	5/2	3/2	30	131.6	.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 3, 1← 3, 3, 0	Ground	5/2	3/2	30	131.6	.1	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3← 3, 2, 2	Excited	5/2	3/2	30	132.0		
D ₂ O ₂ ¹⁶	3- 42	Not Reported				30	134.	3.	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Excited	5/2	3/2	30	135.5		
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Ground	7/2	7/2	30	135.5		
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Excited			30	137.14	.42	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground			30	137.3	.1	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Excited	11/2	9/2	30	137.4		
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground			30	139.4	.2	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground			30	142.1	.1	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
(C ¹² H ₃) ₃ C ³⁵ Cl ³⁵	3- 973	5, ← 4,	Ground					30 142.5	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Excited	5/2		3/2		30 142.6	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Excited	9/2		7/2		30 142.6	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Ground	7/2		7/2		30 142.65	
S ³⁴ P ³¹ Cl ₃ ³⁵	4-1535	11, ←10,	Ground					30 143.2	1.0
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Excited					30 144.14	.47
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Excited	7/2		5/2		30 147.0	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 147.0	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 147.1	.1
a-(C ¹² H ₂ D)(C ¹² H ₃) ₂ C ¹² H	3-1006	2, 2, 0← 1, 1, 0						30 147.92	.05
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3← 3, 2, 2	Excited	11/2		9/2		30 148.9	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Excited	9/2		7/2		30 149.1	
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	2, 2, 1← 2, 1, 2	Ground					30 150.10	.05
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 2, 2← 3, 2, 1	Ground	9/2		7/2		30 151.0	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		30 153.1	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 153.4	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Excited	7/2		5/2		30 154.6	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 0, 4← 3, 0, 3	Ground	9/2		7/2		30 155.6	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 0, 4← 3, 0, 3	Ground	11/2		9/2		30 155.6	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		30 156.9	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Ground	11/2		9/2		30 157.35	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 157.5	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 2, 2← 3, 2, 1	Ground	5/2		3/2		30 158.3	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 0, 4← 3, 0, 3	Ground					30 158.51	.91
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3← 3, 2, 2	Ground	5/2		3/2		30 158.8	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 160.	5.
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Ground	5/2		3/2		30 162.7	
(C ¹² H ₃) ₃ C ¹² D	3-1003	2, ← 1,						30 162.95	.05
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .E	3- 702	6, 1, 5← 6, 0, 6						30 163.59	.2
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Ground					30 164.08	.048
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3← 3, 2, 2	Excited					30 165.20	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 0, 4← 3, 0, 3	Ground	7/2		5/2		30 167.3	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 0, 4← 3, 0, 3	Ground	5/2		3/2		30 167.3	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		30 167.4	
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² D	3-1078	6, 1, 5← 5, 1, 4	Ground					30 167.8	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 3, 2← 3, 3, 1	Ground	11/2		9/2		30 169.0	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Ground	9/2		7/2		30 169.2	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		30 173.8	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Ground					30 174.38	.13
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Ground	7/2		5/2		30 174.8	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3← 3, 2, 2	Ground	11/2		9/2		30 175.6	
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	5, ← 4,	Ground					30 176.8	.10
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3← 3, 2, 2	Excited	7/2		5/2		30 178.7	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		30 179.7	
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground	5/2		5/2		30 179.71	.08

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
O ₃ ¹⁶	4-1841	14, 2, 12←15, 1, 15	Ground					30 181.	
C ¹² ₄ H ₂ C ¹² HD C ¹² H ₂ O ¹⁶ *	4-1094	2, 1, 2←1, 1, 1	Ground					30 181.8	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 184.5	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4←3, 1, 3	Ground		7/2		5/2	30 185.3	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	6, 2, 4←6, 1, 5	Ground					30 186.00	.10
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	5, 0, 5←4, 1, 4	Ground					30 186.53	.2
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	6, 1, 5←6, 0, 6						30 187.73	.2
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	5, 2, 4←4, 2, 3	Ground					30 187.94	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 189.8	.2
g-C ¹² H ₂ Cl ³⁵ C ¹² H ₂ Cl ³⁵	3- 451	2, 2, 1←1, 1, 0						30 190.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 190.	5.
S ³³ O ₂ ¹⁶	4-1832	4, 0, 4←3, 1, 3	Ground		9/2		7/2	30 190.37	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3←3, 2, 2	Ground					30 192.38	.11
S ³³ O ₂ ¹⁶	4-1832	4, 0, 4←3, 1, 3	Ground		7/2		5/2	30 193.01	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 2←3, 2, 1	Ground		5/2		3/2	30 194.05	
S ³³ O ₂ ¹⁶	4-1832	4, 0, 4←3, 1, 3	Ground		11/2		9/2	30 195.91	
S ³³ O ₂ ¹⁶	4-1832	4, 0, 4←3, 1, 3	Ground		5/2		3/2	30 198.56	
(C ¹² H ₃) ₃ C ¹² C ¹³ :C ¹² D	3-1076	6, ←5,	Ground					30 201.9	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 3, 2←3, 3, 1	Ground					30 202.98	.21
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	5, 0, 5←4, 0, 4	Ground					30 203.92	.05
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	5, 0, 5←4, 0, 4	Ground					30 203.97	.2
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3←3, 2, 2	Ground		7/2		5/2	30 205.85	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	5, 1, 4←5, 0, 5	Ground		7/2		7/2	30 206.62	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	5, 1, 4←5, 0, 5	Ground		13/2		13/2	30 207.53	.05
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	5, 1, 4←5, 0, 5	Ground		9/2		9/2	30 209.95	.05
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 2←3, 2, 1	Ground		11/2		9/2	30 210.8	
C ¹² H ₃ C ¹² H ₂ Cl ³⁷	3- 542	5, 1, 4←5, 0, 5	Ground		11/2		11/2	30 210.87	.05
D ₂ C ¹² :C ¹² DCI ³⁵	4- 763	3, 0, 3←2, 0, 2	Ground					30 211.10	
D ₂ C ¹² :C ¹² DCI ³⁵	4- 763	3, 0, 3←2, 0, 2	Ground					30 214.65	
C ^b ₄ H ₂ N ^b H ^b C ^b ₄ H ₂	4- 863	Not Reported						30 215.	10.
C ¹² H ₃ ¹²⁷	4- 481	2, 1←1, 1	Ground		3/2		3/2	30 215.95	.08
C ¹³ H ₃ C ¹² HO	3- 476	4, 0, 4←3, 1, 3	Ground					30 216.05	.2
a-C ¹² H ₂ DO ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 184	4, 0, 4←3, 0, 3	Ground					30 217.30	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						30 219.4	1.
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 3, 2←3, 3, 1	Ground		7/2		5/2	30 220.5	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						30 220.7	1.
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 3←3, 2, 2	Ground		9/2		7/2	30 222.0	
C ¹² DHCl ₂ ³⁵	4- 344	1, 1, 1←0, 0, 0	Ground					30 224.7	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					30 226.8	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 2←3, 2, 1	Ground					30 227.62	.15
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 228.	5.
F ¹⁹ Cl ³⁷	1-	1←0	Ground		3/2		3/2	30 228.344	0.004
s-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 395	2, 1, 1←1, 1, 0	Ground					30 233.13	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					30 236.7	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 2, 2←2, 2, 1	Ground		7/2		5/2	30 238.96	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ± MHz
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Excited	9/2 9/2	30 239.6	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 2← 3, 2, 1	Ground	7/2 5/2	30 242.1	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 2, 2← 2, 2, 1	Ground	5/2 3/2	30 247.36	.1
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 2, 2← 2, 2, 1	Ground	9/2 7/2	30 250.87	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	4, 1, 3← 3, 1, 2	Ground	9/2 9/2	30 252.8	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 2, 2← 3, 2, 1	Ground	9/2 7/2	30 256.9	
F ¹⁹ Cl ³⁷	1-	1← 0	Ground	5/2 3/2	30 257.135	0.003
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	8, 1, 7← 8, 0, 8	Ground		30 258.95	.1
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 2, 2← 2, 2, 1	Ground	3/2 1/2	30 259.08	.1
D ₂ C ¹² :C ¹² DCI ³⁵	4- 763	3, 2, 2← 2, 2, 1	Ground		30 260.80	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			30 263.	5.
s-(C ¹² H ₂ D)(C ¹² H ₃) ₂ C ¹² H	3-1005	2, 2, 1← 1, 1, 1			30 266.06	.20
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 4← 3, 1, 3	Ground	9/2 9/2	30 271.1	
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 2, 1← 2, 2, 0	Ground	7/2 5/2	30 272.84	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 3, 2← 3, 3, 1	Ground	9/2 7/2	30 273.8	
F ¹⁹ Cl ³⁷	1-	1← 0	Ground	1/2 3/2	30 280.056	0.003
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 2, 1← 2, 2, 0	Ground	5/2 3/2	30 281.45	.1
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 2, 1← 2, 2, 0	Ground	9/2 7/2	30 284.50	.1
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -E	3- 198	3, 1, 2← 2, 1, 1	Ground		30 287.49	
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	3, 1, 2← 2, 1, 1	Ground		30 288.46	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 3, 2← 3, 3, 1	Ground	7/2 7/2	30 289.1	
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	2, 1, 2← 1, 1, 1	Excited		30 290.5	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported			30 290.67	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported			30 292.	1.
g-C ¹² H ₂ DC ¹² H ₂ Cl ³⁵	3- 544	3, 2, 1← 2, 2, 0	Ground	3/2 1/2	30 293.03	.1
D ₂ C ¹² :C ¹² DCI ³⁵	4- 763	3, 2, 1← 2, 2, 0	Ground		30 296.	
C ¹³ HCl ³⁵ F ₂ ¹⁹	4- 253	3, 3, 0← 3, 2, 2	Ground		30 299.2	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground		30 299.6	.2
C ¹² H ₃ O ¹⁶ H	3- 211	17, 2, ←17, 1,	Ground		30 308.00	.1
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	2, 1, 1← 1, 1, 0	Ground		30 312.30	.2
Li ⁶ I ¹²⁷	1-	1← 0	Excited	7/2 5/2	30 317.79	0.20
Si ²⁸ H ₃ N ¹⁴ C ¹² S ³²	4- 491	10, ← 9,	Ground		30 320.35	
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	7, ← 6,	Ground		30 321.85	.07
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	7, ← 6,	Excited		30 327.36	.07
S ³² O ₂ ¹⁶ F ₂ ¹⁹	4-1631	3, 2, 1← 2, 1, 1	Excited		30 328.21	.10
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	3, 1, 3← 2, 1, 2	Ground		30 328.58	.10
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	7, ← 6,	Excited		30 332.33	.07
Ge ⁷⁴ F ₃ ¹⁹ Cl ³⁵	4-1405	7, ← 6,	Ground		30 332.58	1.00
Li ⁶ I ¹²⁷	1-	1← 0	Excited	3/2 5/2	30 336.40	0.40
c-DHC ¹² :C ¹² DCI ³⁵	4- 762	3, 1, 3← 2, 1, 2	Ground		30 336.75	
S ³² O ₂ ¹⁶ F ₂ ¹⁹	4-1631	3, 1, 3← 2, 1, 2	Excited		30 337.21	.10
S ³² O ₂ ¹⁶ F ₂ ¹⁹	4-1631	3, 0, 3← 2, 0, 2	Excited		30 339.09	.10
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground		30 340.15	.1
c-DHC ¹² :C ¹² DCI ³⁵	4- 762	3, 1, 3← 2, 1, 2	Ground		30 340.50	
S ³² O ₂ ¹⁶ F ₂ ¹⁹	4-1631	3, 1, 2← 2, 1, 1	Excited		30 341.39	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
a-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 597	3, 0, 3← 2, 1, 2	Ground					30 343.3	.5
Ge ⁷² F ¹⁹ Cl ³⁵	4-1403	7, ← 6,	Ground					30 344.56	.30
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, 9← 9, 9	Ground		21/2		19/2	30 346.49	
S ³⁴ O ₂ F ₂ ¹⁹	4-1632	3, 1, 3← 2, 1, 2	Ground					30 346.69	.10
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					30 350.	20.
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						30 350.0	25.
S ³² O ₂ F ₂ ¹⁹	4-1631	3, 3, 0← 2, 2, 0	Excited					30 358.29	.10
Ge ⁷⁰ F ¹⁹ Cl ³⁵	4-1401	7, ← 6,	Ground					30 358.62	.30
S ³⁴ O ₂ F ₂ ¹⁹	4-1632	3, 0, 3← 2, 0, 2	Ground					30 362.12	.10
S ³² O ₂ F ₂ ¹⁹	4-1631	3, 1, 3← 2, 1, 2	Ground					30 364.62	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 366.66	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	25, 2,23←25, 2,24	Ground					30 368.36	
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, 2← 9, 2	Ground		21/2		21/2	30 369.52	
Ge ⁷² HCl ₃ ³⁵	4-1492	7, ← 6,	Ground					30 370.06	.07
S ³² O ₂ F ₂ ¹⁹	4-1621	Not Reported						30 370.65	.1
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, 8← 9, 8	Ground		21/2		19/2	30 371.50	
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² D	3-1072	6, ← 5,	Ground					30 373.0	.1
Ge ⁷² HCl ₃ ³⁵	4-1492	7, ← 6,	Excited					30 376.20	.07
s-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 943	3, 0, 3← 2, 1, 2	Ground					30 377.99	.05
S ³² O ₂ F ₂ ¹⁹	4-1631	3, 3, 1← 2, 2, 1	Excited					30 378.13	.10
S ³² O ₂ F ₂ ¹⁹	4-1631	3, 0, 3← 2, 0, 2	Ground					30 379.74	.10
S ³² O ₂ F ₂ ¹⁹	4-1631	3, 0, 3← 2, 0, 2	Excited					30 385.22	.10
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground					30 386.08	
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground					30 386.82	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 387.3	.1
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground					30 387.43	
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, 9← 9, 9	Ground		19/2		17/2	30 387.87	
C ¹² HCl ₃ ³⁵ F ¹⁹	4- 251	3, 3, 0← 3, 2, 2	Ground		3/2		3/2	30 389.4	.05
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground					30 390.29	
S ³² O ₂ F ₂ ¹⁹	4-1631	3, 2, 2← 2, 2, 1	Ground					30 390.31	.10
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground					30 391.03	
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	3, 1, 3← 2, 1, 2	Ground					30 391.14	.10
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground					30 392.19	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Ground		5/2		5/2	30 392.85	
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, 7← 9, 7	Ground		21/2		19/2	30 393.47	
S ³⁴ O ₂ F ₂ ¹⁹	4-1632	3, 1, 2← 2, 1, 1	Ground					30 394.30	.10
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	4, 1, 3← 3, 1, 2	Ground					30 394.56	.2
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground					30 395.37	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 395.6	
C ¹² F ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground					30 397.85	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	7, 1, 6← 7, 0, 7	Ground		15/2		15/2	30 398.44	.05
C ¹² HCl ₃ ³⁵ F ¹⁹	4- 251	3, 3, 0← 3, 2, 2	Ground		9/2		9/2	30 398.8	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 6← 6, 3, 3	Ground					30 398.95	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 6← 6, 3, 3	Ground					30 399.88	.05
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						30 400.0	25.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
S ³² O ₂ F ₂ ¹⁹	4-1631	3, 2, 1← 2, 2, 0	Ground					30 400.64	.10
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 6← 6, 3, 3	Ground					30 400.80	.05
C ¹² F ₃ I ¹²⁷	4- 231	10, 8← 9, 8	Ground	23/2		21/2		30 400.97	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	7, 1, 6← 7, 0, 7	Ground	13/2		13/2		30 402.48	.05
C ¹² F ₃ I ¹²⁷	4- 231	10, 8← 9, 8	Ground	19/2		17/2		30 402.76	
C ¹² HClF ₂ ¹⁹	4- 251	3, 3, 0← 3, 2, 2	Ground					30 405.68	.10
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Excited	7/2		7/2		30 408.3	
HC ¹² *:C ¹² HO ¹⁶ C ¹² O ¹⁶ O ¹⁶ *	4- 931	4, 1, 3← 3, 1, 2	Ground					30 409.18	.10
C ¹² HClF ₂ ¹⁹	4- 251	3, 3, 0← 3, 2, 2	Ground	5/2		5/2		30 409.4	.05
C ¹² F ₃ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	21/2		21/2		30 412.09	
S ³² O ₂ F ₂ ¹⁹	4-1631	3, 1, 2← 2, 1, 1	Ground					30 412.33	.10
C ¹² F ₃ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	21/2		19/2		30 412.64	
C ¹² F ₃ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	19/2		19/2		30 413.84	
C ¹² F ₃ I ¹²⁷	4- 231	10, ← 9,	Ground					30 414.44	
C ¹² F ₃ I ¹²⁷	4- 231	10, 7← 9, 7	Ground	19/2		17/2		30 416.42	
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	7, 1, 6← 7, 0, 7	Ground	17/2		17/2		30 418.10	.05
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	7, ← 6,	Ground					30 418.73	.07
C ¹² HClF ₂ ¹⁹	4- 251	3, 3, 0← 3, 2, 2	Ground	7/2		7/2		30 418.9	.05
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 196	3, 1, 2← 2, 1, 1	Ground					30 419.40	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 195	3, 1, 2← 2, 1, 1	Ground					30 420.24	
C ¹² F ₃ I ¹²⁷	4- 231	10, 7← 9, 7	Ground	23/2		21/2		30 420.49	
C ¹² F ₃ I ¹²⁷	4- 231	10, ← 9,	Ground					30 421.04	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 421.6	.1
C ¹² H ₃ C ¹² H ₂ Br ⁸¹	3- 522	7, 1, 6← 7, 0, 7	Ground	11/2		11/2		30 422.02	.05
C ¹² F ₃ I ¹²⁷	4- 231	10, ← 9,	Ground					30 425.23	
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² H	3-1004	2, 1, 1← 1, 0, 1						30 426.24	.10
C ¹² F ₃ I ¹²⁷	4- 231	10, ← 9,	Ground					30 426.25	
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	7, ← 6,	Excited					30 426.84	.07
C ¹² F ₃ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	19/2		17/2		30 427.99	
C ¹² F ₃ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	21/2		19/2		30 428.97	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Excited	11/2		9/2		30 429.5	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	7, 1, 6← 7, 0, 7	Ground	17/2		15/2		30 431.79	.05
C ¹² F ₃ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	21/2		21/2		30 432.06	
C ¹² F ₃ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	17/2		17/2		30 432.06	
C ¹² F ₃ I ¹²⁷	4- 231	10, ← 9,	Ground					30 434.89	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Excited	5/2		3/2		30 434.9	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					30 434.95	.1
C ¹² F ₃ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	23/2		21/2		30 436.24	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	7, 1, 6← 7, 0, 7	Ground	15/2		13/2		30 436.59	.05
C ¹² F ₃ I ¹²⁷	4- 231	10, ← 9,	Ground					30 436.74	
C ¹² F ₃ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	19/2		17/2		30 437.54	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					30 438.57	.1
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						30 439.7	.2
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	5, 2, 3← 5, 1, 4	Ground					30 441.65	.10
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Excited	9/2		7/2		30 441.8	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F		Frequency MHz	Acc. ±MHz
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 4← 9, 4	Ground	21/2	19/2	30 442.17	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Ground	7/2	7/2	30 444.8	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 4← 9, 4	Ground	19/2	17/2	30 445.32	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground			30 446.3	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground			30 446.96	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	23/2	21/2	30 449.49	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 3← 9, 3	Ground	19/2	17/2	30 451.31	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 3← 9, 3	Ground	21/2	19/2	30 452.49	
C ¹² H ₃ I ¹²⁷	4- 481	2, 0← 1, 0	Ground	3/2	5/2	30 453.46	.08
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	7, 1, 6← 7, 0, 7	Ground	19/2	17/2	30 455.39	.05
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 2← 9, 2	Ground	19/2	17/2	30 455.46	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 0← 9, 0	Ground	17/2	15/2	30 455.63	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 1← 9, 1	Ground	17/2	15/2	30 456.13	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 2← 9, 2	Ground	17/2	15/2	30 457.42	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 1← 9, 1	Ground	19/2	17/2	30 458.15	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 0← 9, 0	Ground	19/2	17/2	30 459.00	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 7← 9, 7	Ground	21/2	21/2	30 459.00	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	31,15, ←30,16,	Ground			30 459.2	.1
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 3← 9, 3	Ground	17/2	15/2	30 459.51	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 0← 9, 0	Ground	15/2	13/2	30 459.51	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 2← 9, 2	Ground	21/2	19/2	30 459.83	
C ¹² H ₃ C ¹² H ₂ Br ⁷⁹	3- 521	7, 1, 6← 7, 0, 7	Ground	13/2	11/2	30 460.07	.05
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 4← 9, 4	Ground	23/2	21/2	30 461.76	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 1← 9, 1	Ground	15/2	13/2	30 462.16	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 4← 9, 4	Ground	17/2	15/2	30 462.46	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 1← 9, 1	Ground	21/2	19/2	30 464.26	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Ground	11/2	9/2	30 465.6	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground			30 465.7	.1
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 0← 9, 0	Ground	21/2	19/2	30 465.76	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	17/2	15/2	30 466.29	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, ← 9,	Ground			30 467.09	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 2← 9, 2	Ground	15/2	13/2	30 467.72	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 0← 9, 0	Ground	25/2	23/2	30 468.32	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported				30 469.	5.
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 3← 9, 3	Ground	23/2	21/2	30 469.63	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 7← 9, 7	Ground	25/2	23/2	30 470.02	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Ground	5/2	3/2	30 470.9	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	17/2	15/2	30 470.95	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Ground			30 471.54	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 2← 9, 2	Ground	25/2	23/2	30 473.55	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground			30 475.5	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Ground	9/2	7/2	30 475.6	
(C ¹² H ₃) ₂ C ¹² :C ¹² HD	3- 944	3, 0, 3← 2, 1, 2	Ground			30 475.68	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 2← 9, 2	Ground	23/2	21/2	30 476.54	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 4← 9, 4	Ground	19/2	19/2	30 476.54	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	15/2	15/2			30 476.54	
C ¹² D ₃ C ¹² N ¹⁵	4- 821	2, ← 1,	Ground					30 477.54	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 3← 9, 3	Ground	15/2	13/2			30 477.65	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 7← 9, 7	Ground	17/2	15/2			30 477.65	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 0← 9, 0	Ground	23/2	21/2			30 480.14	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 1← 9, 1	Ground	23/2	21/2			30 480.14	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 3← 9, 3	Ground	25/2	23/2			30 480.14	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 480.9	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Ground	7/2	5/2			30 481.0	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 1, 3← 3, 1, 2	Ground					30 486.4	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 487.4	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 9← 9, 9	Ground	17/2	15/2			30 489.17	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 4← 9, 4	Ground	25/2	23/2			30 489.17	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 8← 9, 8	Ground	21/2	21/2			30 489.17	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 491.	5.
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 4← 9, 4	Ground	15/2	13/2			30 491.56	
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	3, 3, 1← 3, 2, 2	Ground					30 494.62	.1
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	17/2	17/2			30 500.73	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 3← 9, 3	Ground	19/2	19/2			30 500.73	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	25/2	23/2			30 500.73	
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	10, 6, 4←10, 6, 5	Ground					30 501.80	.2
C ¹² H ₂ Cl ₂ ³⁷	4- 343	5, 1, 4← 5, 0, 5	Ground					30 502.	5.
(C ¹² H ₃) ₂ O ¹⁸	3- 595	3, 0, 3← 2, 1, 2	Ground					30 503.0	.5
(C ¹² H ₃) ₂ C ¹² :C ¹² HD	3- 944	2, 2, 1← 1, 1, 0	Ground					30 503.15	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						30 505.	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	5, 0, 5← 4, 0, 4	Ground					30 507.94	.2
C ¹² H ₃ S ³² H	3- 221	14, 1,14←13, 2,11	Ground					30 508.6	
Si ²⁸ H ₂ F ₂ ¹⁹	4-1602	5, 1, 4← 5, 0, 5	Ground					30 509.25	.10
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	23/2	23/2			30 509.58	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 5← 9, 5	Ground	15/2	13/2			30 509.58	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						30 511.	3.
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	25/2	23/2			30 514.83	
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 2← 9, 2	Ground	19/2	19/2			30 514.83	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Excited	5/2	5/2			30 515.7	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 0, 5← 4, 0, 4	Ground					30 517.53	.2
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Excited	9/2	9/2			30 517.9	
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	6, 3, 3← 6, 2, 4	Ground					30 521.46	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 521.8	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	20, 3,17←20, 3,18						30 523.12	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	5, 0, 5← 4, 1, 4	Ground					30 524.12	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 524.5	.1
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	6, 2, 4← 6, 1, 5	Excited					30 524.85	.10
O ₃ ¹⁶	4-1841	18, 2,16←19, 1,19	Ground					30 525.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 525.	5.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					30 526.20	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	5, 2, 3← 4, 2, 2	Ground					30 530.25	.2
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 7← 9, 7	Ground	25/2		23/2		30 531.33	
P ³¹ H ₃ ^b	4-1785	Not Reported						30 531.33	.05
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	12, 4, 8←12, 3, 9	Ground					30 531.92	.2
C ¹² F ₃ ¹⁹ I ¹²⁷	4- 231	10, 6← 9, 6	Ground	15/2		13/2		30 532.05	
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	9, 1, 8← 9, 0, 9	Ground					30 535.	5.
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	7, 1, 6← 7, 0, 7	Ground					30 537.91	.2
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 1, 3← 3, 1, 2	Ground					30 542.05	
(C ¹² H ₃) ₂ S ³²	3- 601	3, 0, 3← 2, 1, 2	Ground					30 542.49	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 0, 3← 2, 1, 2	Ground					30 542.60	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 0, 3← 2, 1, 2	Ground					30 542.70	.05
(C ¹² H ₃) ₂ C ¹² :C ¹² HD	3- 944	3, 1, 3← 2, 0, 2	Ground					30 542.80	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	7, 1, 6← 7, 0, 7	Ground					30 545.52	.2
F ¹⁹ Cl ³⁵	1-	1← 0	Excited	3/2		3/2		30 545.994	0.069
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	5, 1, 4← 5, 0, 5	Ground					30 548.92	.10
s-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 395	8, 4, 4← 8, 4, 5	Ground					30 549.9	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Ground	5/2		5/2		30 550.2	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 4← 3, 1, 3	Ground	9/2		9/2		30 553.8	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	3, 2, 1← 2, 2, 0						30 555.37	.2
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						30 560.3	.3
C ¹² D ₃ C ¹² N ¹⁵	4- 821	2, ← 1,	Excited					30 563.8	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					30 564.89	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	21, 5, ←20, 6,	Ground					30 565.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground					30 565.9	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	21, 5, ←20, 6,	Ground					30 566.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					30 566.42	
C ¹² H ₃ Si ²⁸ Cl ³⁷	3- 112	9, ← 8,	Excited					30 569.09	.5
F ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	20, 6,14←20, 5,16	Ground					30 572.0	.3
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Excited	7/2		7/2		30 576.1	
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	10, 6, 4←10, 6, 5	Ground					30 577.20	.2
Li ⁶ I ¹²⁷	1-	1← 0	Ground	5/2		5/2		30 578.28	0.10
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						30 580.73	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	5, 0, 5← 4, 0, 4	Ground					30 582.3	.1
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	5, 0, 5← 4, 0, 4	Ground					30 582.35	.2
F ¹⁹ Cl ³⁵	1-	1← 0	Excited	5/2		3/2		30 582.614	0.069
D ₂ C ¹² :C ¹² DCI ³⁷	4- 765	3, 1, 2← 2, 1, 1	Ground					30 593.66	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	4, 1, 3← 3, 1, 2	Ground					30 596.0	
D ₂ C ¹² :C ¹² DCI ³⁷	4- 765	3, 1, 2← 2, 1, 1	Ground					30 596.50	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 3, 2← 3, 3, 1	Ground	5/2		3/2		30 598.9	
H ₂ C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground					30 599.32	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						30 600.	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Excited	11/2		9/2		30 600.9	
C ¹² H ₂ Cl ³⁷ Si ²⁸ H ₃	3- 232	5, 1, 4← 4, 1, 3	Ground					30 601.08	.2
a-(C ¹² H ₂ D)(C ¹² H ₃) ₂ C ¹² H	3-1006	2, 2, 1← 1, 1, 1						30 607.11	.05
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	4, 1, 3← 3, 1, 2	Ground					30 608.53	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Excited	5/2		3/2		30 610.2	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	4, 1, 3← 3, 1, 2	Ground					30 610.27	.2
F ¹⁹ Cl ³⁵	1-	1← 0	Excited	1/2		3/2		30 611.761	0.069
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Ground	7/2		7/2		30 612.55	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 616.1	.1
Li ⁶ I ¹²⁷	1-	1← 0	Ground	7/2		5/2		30 620.17	0.10
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Excited	11/2		9/2		30 623.7	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 626.50	
C ¹² D ₃ Br ⁸¹	4- 404	2, 0← 1, 0	Ground	3/2		3/2		30 629.28	.10
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 629.6	.1
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	5, 1, 4← 5, 0, 5	Ground					30 635.	5.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Ground	5/2		3/2		30 636.7	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		30 637.2	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Excited					30 637.56	.03
Li ⁶ I ¹²⁷	1-	1← 0	Ground	3/2		5/2		30 638.10	0.15
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	6, 3, 3← 6, 2, 4	Ground					30 639.42	.05
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 3, 2← 3, 3, 1	Ground	11/2		9/2		30 642.9	
C ¹³ H ₃ O ¹⁶ H	3- 213	15, 2, ←15, 1,	Ground					30 643.69	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		30 643.7	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Ground					30 644.41	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						30 645.	1.
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		30 649.3	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Ground	11/2		9/2		30 649.9	
g-C ¹² H ₂ Cl ³⁵ C ¹² H ₂ Cl ³⁵	3- 451	12, 1, 11←12, 0, 12						30 650.	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 0, 5← 4, 0, 4	Ground					30 652.24	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 652.31	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Ground	7/2		5/2		30 655.7	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 2← 3, 2, 1	Ground	5/2		3/2		30 655.8	
a-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 942	3, 0, 3← 2, 1, 2	Ground					30 657.22	.05
C ¹² HD ₂ C ¹² :C ¹² H	4-1048	2, 1, 2← 1, 1, 1	Ground					30 658.07	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						30 659.9	1.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Excited	9/2		7/2		30 661.9	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Ground					30 663.99	.08
C ¹² D ₃ Br ⁸¹	4- 404	2, 1← 1, 1	Ground	3/2		1/2		30 665.35	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 666.43	
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 3← 3, 1, 2	Ground	7/2		5/2		30 667.5	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² *HCl ³⁵	4-1081	4, 1, 3← 3, 1, 2	Ground	9/2		7/2		30 668.8	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		30 669.6	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 3, 2← 3, 3, 1	Ground					30 670.60	.15
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 674.	5.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Ground	7/2		5/2		30 675.1	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	4, 0, 4← 3, 1, 3	Ground	5		4		30 677.65	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	4, 0, 4← 3, 1, 3	Ground	3		2		30 677.65	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					30 678.66	.1
C ¹² H ₂ F ₂ ¹⁹	4- 351	10, 1, 10← 9, 2, 7	Ground					30 679.01	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	4, 0, 4← 3, 1, 3	Ground		4		3	30 679.05	.10
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² H	3-1004	2, 2, 0← 1, 1, 0						30 682.00	.10
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 2← 3, 2, 1	Ground					30 683.39	.06
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 3, 2← 3, 3, 1	Ground		7/2		5/2	30 684.6	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 684.9	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 3← 3, 2, 2	Ground		9/2		7/2	30 688.3	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 688.4	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					30 693.42	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 694.5	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 2← 3, 2, 1	Ground		7/2		5/2	30 694.5	
C ¹² D ₃ Br ⁸¹	4- 404	2, 1← 1, 1	Ground		7/2		5/2	30 695.83	.10
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	10, 3, 7←10, 2, 8	Ground		19/2		19/2	30 696.01	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	10, 3, 7←10, 2, 8	Ground		21/2		21/2	30 696.01	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	10, 3, 7←10, 2, 8	Ground		23/2		23/2	30 697.15	.2
C ¹² H C ¹³ O ¹⁶ Cl ³⁵	3- 369	10, 3, 7←10, 2, 8	Ground		17/2		17/2	30 697.15	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 699.	5.
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 702.05	.05
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	10, 3, 7←10, 2, 8	Ground		21/2		21/2	30 702.86	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	10, 3, 7←10, 2, 8	Ground		19/2		19/2	30 702.86	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	10, 3, 7←10, 2, 8	Ground		23/2		23/2	30 703.99	.2
C ¹² H ₃ C ¹³ O ¹⁶ Cl ³⁵	3- 369	10, 3, 7←10, 2, 8	Ground		17/2		17/2	30 703.99	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 705.	5.
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 2, 2← 3, 2, 1	Ground		9/2		7/2	30 707.9	
C ¹² D ₃ Br ⁸¹	4- 404	2, 0← 1, 0	Ground		5/2		3/2	30 714.74	.10
C ¹² D ₃ Br ⁸¹	4- 404	2, 0← 1, 0	Ground		7/2		5/2	30 714.74	.10
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Ground		5/2		5/2	30 717.2	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 3, 2← 3, 3, 1	Ground		5/2		5/2	30 718.9	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					30 721.3	
C ¹² D ₃ Br ⁸¹	4- 404	2, 0← 1, 0	Ground		1/2		1/2	30 724.89	.10
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 3, 2← 3, 3, 1	Ground		9/2		7/2	30 728.9	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						30 739.	3.
C ¹² H ₃ S ³² H	3- 221	12, 1, 11←11, 2, 10	Ground					30 741.8	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 4← 3, 1, 3	Ground		9/2		9/2	30 742.8	
C ¹² D ₃ Br ⁷⁹	4- 403	2, 0← 1, 0	Ground		3/2		3/2	30 743.99	.10
C ¹² H ₃ O ¹⁶ H	3- 211	22, 2, ←22, 1,	Ground					30 752.26	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	11, 3, 8←11, 2, 9	Ground					30 754.10	.03
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					30 754.75	
C ¹² D ₃ Br ⁸¹	4- 404	2, 1← 1, 1	Ground		5/2		5/2	30 756.12	.10
a-C ¹² H ₃ DC ¹² O ¹⁶ F ¹⁹	3- 398	5, 2, 3← 5, 2, 4	Ground					30 757.31	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	5, 2, 3← 5, 2, 4	Ground					30 758.58	.2
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	5, 0, 5← 4, 1, 4	Ground					30 759.12	.2
s-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 943	3, 1, 3← 2, 0, 2	Ground					30 759.55	.05
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Excited		11/2		9/2	30 759.9	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						30 762.0	1.
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 3, 2← 3, 3, 1	Ground		5/2		3/2	30 762.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	7, ← 6,	Ground		30 762.89	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Ground	7/2 7/2	30 763.4	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported			30 765.	10.
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Excited	5/2 3/2	30 765.4	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Excited		30 765.91	.63
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		30 768.28	
C ¹² H ₂ Cl ₂ ³⁵	4- 341	5, 1, 4← 5, 0, 5	Ground		30 769.	5.
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Excited	9/2 7/2	30 770.5	
H ₂ ^b C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground		30 770.90	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground		30 771.9	.1
C ¹² D ₃ Br ⁸¹	4- 404	2, 1← 1, 1	Ground	3/2 3/2	30 773.17	.10
H ₂ ^b C ^b :C ^b H ^b Cl ^b	4- 772	Not Reported	Ground		30 773.62	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Excited	7/2 5/2	30 773.7	
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	5, 1, 4← 4, 1, 3	Ground		30 779.07	.2
C ¹³ D ₃ C ¹² N ¹⁴	4- 819	2, ← 1,	Ground		30 780.90	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Ground	11/2 9/2	30 781.4	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 3← 3, 2, 2	Excited	5/2 3/2	30 782.6	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		30 784.13	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Ground	5/2 3/2	30 786.9	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Ground		30 787.25	.24
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground		30 788.6	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported			30 791.	3.
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Ground	9/2 7/2	30 791.9	
C ¹² HD ₂ C ¹² :C ¹² H	4-1048	2, 0, 2← 1, 0, 1	Ground		30 793.13	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Ground	7/2 5/2	30 795.05	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		30 795.32	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	5, 2, 3← 5, 1, 4	Excited		30 796.10	.10
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 3← 3, 2, 2	Excited	11/2 9/2	30 798.75	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			30 800.	5.
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	7, 3, 4← 7, 2, 5	Ground		30 800.79	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	3, 1, 2← 3, 0, 3	Ground		30 802.1	
a-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 942	3, 1, 3← 2, 0, 2	Ground		30 803.61	.05
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	7, 4, 3← 7, 4, 4	Ground		30 804.8	.3
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 0← 2, 1, 1	Ground		30 806.69	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 0← 2, 1, 1	Ground		30 806.83	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 0← 2, 1, 1	Ground		30 807.35	.05
F ¹⁹ Cl ³⁵	1-	1← 0	Ground	3/2 3/2	30 807.366	0.003
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 0← 2, 1, 1	Ground		30 807.95	.05
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	3, 1, 2← 3, 0, 3	Ground		30 808.22	
O ¹⁶ F ₂ ¹⁹	4-1611	33, 8,26←34, 7,27	Ground		30 808.75	.10
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 3← 3, 2, 2	Ground	5/2 3/2	30 809.2	
a-C ¹² H ₂ DC ¹² H ₂ C ¹² H ₃	3- 786	6, 1, 5← 6, 0, 6	Ground		30 811.32	.06
C ¹² H ₂ Cl ₂ ³⁵	4- 341	7, 2, 6← 8, 1, 7	Ground		30 812.	5.
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 3, 2← 3, 3, 1	Ground	11/2 9/2	30 814.9	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground		30 815.2	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 3← 3, 2, 2	Excited					30 815.49	
C ¹² D ₃ Br ⁸¹	4- 404	2, 1← 1, 1	Ground	5/2		3/2		30 815.96	.10
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 819.3	.1
C ¹² *H ₂ C ¹² D:C ¹² *D	4-1033	6, 4, 2← 6, 4, 3	Ground					30 819.7	
(C ¹² H ₃) ₂ S ³²	3- 601	5, 1, 4← 5, 0, 5	Ground					30 822.84	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 1, 4← 5, 0, 5	Ground					30 823.32	.05
C ¹² D ₃ Br ⁷⁹	4- 403	2, 1← 1, 1	Ground	7/2		5/2		30 823.44	.10
(C ¹² H ₃) ₂ S ³²	3- 601	5, 1, 4← 5, 0, 5	Ground					30 823.80	.05
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 3← 3, 2, 2	Ground	11/2		9/2		30 825.4	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 825.5	.1
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	6, 1, 5← 6, 0, 6	Ground					30 828.35	.10
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 0, 4← 3, 0, 3	Ground	7/2		5/2		30 829.0	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						30 830.61	
C ¹² D ₃ Br ⁸¹	4- 404	1, 0← 1, 0	Ground	5/2		5/2		30 834.73	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					30 835.45	.1
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	5, 2, 4← 4, 2, 3	Ground					30 835.52	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 836.2	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	10, 3, 7←10, 2, 8	Ground	21/2		21/2		30 836.85	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	10, 3, 7←10, 2, 8	Ground	19/2		19/2		30 836.85	.2
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						30 837.8	1.
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	10, 3, 7←10, 2, 8	Ground	17/2		17/2		30 837.95	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	10, 3, 7←10, 2, 8	Ground	23/2		23/2		30 837.95	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 839.3	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 840.	5.
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 3← 3, 2, 2	Ground					30 841.92	.11
C ¹³ D ₃ C ¹² N ¹⁴	4- 819	2, ← 1,	Excited					30 842.1	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						30 843.59	.1
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	10, 3, 7←10, 2, 8	Ground	21/2		21/2		30 843.67	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	10, 3, 7←10, 2, 8	Ground	19/2		19/2		30 843.67	.2
F ¹⁹ Cl ³⁵	1-	1← 0	Ground	5/2		3/2		30 843.875	0.004
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	10, 3, 7←10, 2, 8	Ground	23/2		23/2		30 844.77	.2
C ¹² H ₃ C ¹² O ¹⁶ Cl ³⁵	3- 361	10, 3, 7←10, 2, 8	Ground	17/2		17/2		30 844.77	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		30 845.2	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 845.4	.1
C ¹² D ₃ Br ⁷⁹	4- 403	2, 0← 1, 0	Ground	7/2		5/2		30 846.00	.10
C ¹² D ₃ Br ⁷⁹	4- 403	2, 0← 1, 0	Ground	5/2		3/2		30 846.00	.10
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 3, 2← 3, 3, 1	Ground					30 848.47	.19
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 3← 3, 2, 2	Ground	7/2		5/2		30 855.2	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 855.4	.1
S ³² P ³¹ Cl ³⁵	4-1531	11, ←10,	Ground					30 857.9	.5
C ¹² D ₃ Br ⁷⁹	4- 403	2, 0← 1, 0	Ground	1/2		1/2		30 858.24	.10
C ¹² H ₃ O ¹⁶ H	3- 211	18, 2, ←18, 1,	Ground					30 858.40	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 859.78	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	4, 1, 3← 3, 1, 2	Ground	9/2		9/2		30 860.8	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 2← 3, 2, 1	Ground					30 861.81	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 863.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 2, 8←10, 1, 9	Ground					30 864.26	.1
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 865.0	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 3, 2← 3, 3, 1	Ground	7/2		5/2		30 865.3	
C ¹³ D ₃ C ¹² N ¹⁴	4- 819	2, ← 1,	Excited					30 867.1	
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	3, 3, 0← 2, 2, 0	Ground					30 868.47	.05
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 3← 3, 2, 2	Ground	9/2		7/2		30 870.8	
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 870.8	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	2, 1, 2← 1, 1, 1	Ground					30 871.35	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 2, 8←10, 1, 9	Ground					30 872.70	.1
F ¹⁹ Cl ³⁵	1-	1← 0	Ground	1/2		3/2		30 872.963	0.004
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 874.8	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 874.84	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		30 874.9	
(C ¹² H ₃) ₃ Si ³⁰ D	3- 876	3, ← 2,	Ground					30 875.6	.2
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	12, 2,10←13, 1,13	Ground					30 877.	
HN ¹⁵ O ₃ ¹⁶	3- 33	2, 1, 2← 1, 1, 1	Ground					30 877.22	
C ¹² H ₃ C ¹² :C ¹² C ¹² H ₂ Cl ³⁷	3- 902	11, 0,11←10, 0,10	Ground					30 877.9	.3
D ₂ O ₂ ¹⁶	3- 42	Not Reported						30 878.	3.
HN ¹⁴ O ₃ ¹⁶	3- 31	2, 1, 2← 1, 1, 1	Ground	1		0		30 881.24	
HN ¹⁴ O ₃ ¹⁶	3- 31	2, 1, 2← 1, 1, 1	Ground	3		2		30 881.69	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						30 881.71	
HN ¹⁴ O ₃ ¹⁶	3- 31	2, 1, 2← 1, 1, 1	Ground	2		1		30 881.92	
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	5, 1, 4← 5, 0, 5	Excited					30 884.00	.10
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					30 884.5	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Ground	5/2		5/2		30 889.6	
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	9, 4, 5← 9, 3, 6	Ground					30 889.66	.2
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 890.8	.1
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	5, 1, 4← 4, 1, 3	Ground	9/2 11/2	7/2	9/2		30 892.78	.05
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	5, 1, 4← 4, 1, 3	Ground	7/2 13/2	5/2	11/2		30 892.78	.05
C ¹² H ₂ Cl ³⁵ Si ²⁹ H ₃	3- 234	5, 1, 4← 4, 1, 3	Ground					30 892.79	.2
C ¹³ D ₃ C ¹² N ¹⁴	4- 819	2, ← 1,	Excited					30 895.5	
C ¹² D ₃ Br ⁷⁹	4- 403	2, 1← 1, 1	Ground	5/2		5/2		30 895.58	.10
C ¹² D ₃ Br ⁷⁹	4- 403	2, 0← 1, 0	Ground	5/2		5/2		30 898.82	.10
C ¹² DHCl ₂ ³⁵	4- 344	9, 1, 8← 9, 0, 9	Ground					30 900.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 903.	5.
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	3, 3, 1← 2, 2, 1	Ground					30 906.52	.05
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 3, 2← 3, 3, 1	Ground	5/2		5/2		30 906.6	
(C ¹³ H ₃)(C ¹² H ₃) ₂ C ¹² H	3-1004	2, 2, 1← 1, 1, 1						30 910.58	.10
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	12, 2,10←13, 1,13	Ground					30 914.	
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 3, 7←10, 2, 8	Ground					30 914.77	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 3, 7←10, 2, 8	Ground					30 915.52	.2
C ¹² D ₃ Br ⁷⁹	4- 403	2, 1← 1, 1	Ground	3/2		3/2		30 916.21	.10
(C ¹² H ₃) ₃ Si ²⁹ D	3- 874	3, ← 2,	Ground					30 916.4	.1
P ³¹ O ¹⁶ C ¹³ ³⁷	4-1512	8, ← 7,	Ground					30 918.4	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 3, 2← 3, 3, 1	Ground	9/2	7/2			30 918.5	
HDO ₂ ¹⁶	3- 43	14, , ←14, ,						30 921.	3.
C ¹² HD ₂ C ¹² :C ¹² H	4-1048	2, 1, 1← 1, 1, 0	Ground					30 927.55	.1
a-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 942	2, 2, 1← 1, 1, 0	Ground					30 927.96	.05
HDO ₂ ¹⁶	3- 43	14, , ←14, ,						30 928.	3.
(C ¹² H ₃) ₃ Si ²⁸ D	3- 872	3, ← 2,	Excited					30 928.5	.1
C ¹² D ₂ Cl ³⁵ Si ²⁸ H ₃	3- 235	5, 1, 4← 4, 1, 3	Ground					30 930.22	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 2, 8←10, 1, 9	Ground					30 930.46	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 3, 2← 3, 3, 1	Ground	7/2	7/2			30 932.0	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 3, 0← 3, 2, 2	Ground					30 932.07	.10
(C ¹² H ₃) ₃ Si ²⁸ D	3- 872	3, ← 2,	Excited					30 933.4	.2
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	3, 1, 2← 3, 0, 3	Ground					30 945.15	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Ground	7/2	7/2			30 945.2	
F ¹⁹ HC ¹³ O ¹⁶	4- 273	7, 2, 6← 8, 1, 7						30 947.4	.2
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Excited	5/2	3/2			30 951.2	
C ¹³ D ₃ C ¹² N ¹⁴	4- 819	2, ← 1,	Excited					30 951.3	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Excited					30 953.09	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Excited	9/2	7/2			30 957.6	
(C ¹² H ₃) ₃ Si ²⁸ D	3- 872	3, ← 2,	Ground					30 957.8	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 958.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 2, 3← 5, 1, 4	Ground					30 961.14	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Excited	7/2	5/2			30 961.2	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 2, 3← 5, 1, 4	Ground					30 961.40	.1
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	2, 2, 1← 1, 1, 0	Ground					30 962.08	
C ¹² H ₂ F ₂ ¹⁹	4- 351	15, 5,11←16, 4,12	Ground					30 962.08	.10
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Ground	11/2	9/2			30 966.4	
C ¹² D ₃ Br ⁷⁹	4- 403	2, 1← 1, 1	Ground	5/2	3/2			30 967.53	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					30 972.32	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Ground	5/2	3/2			30 973.1	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 2, 3← 5, 1, 4	Ground					30 973.40	.1
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Ground					30 973.48	.45
S ³⁴ O ₂ ¹⁶	4-1833	8, 1, 7← 7, 2, 6	Ground					30 975.39	.02
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	11, 1,10←11, 0,11	Ground					30 975.79	.2
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	2, ← 1,	Excited					30 978.5	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Ground	9/2	7/2			30 979.2	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						30 980.	5.
C ¹² H ₃ Si ²⁸ Cl ³⁵ Cl ₂ ³⁷	3- 114	9, , ← 8, ,	Ground					30 980.	20.
(C ¹² H ₃) ₃ Si ²⁸ D	3- 872	3, ← 2,	Excited					30 982.0	.2
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	4, 1, 3← 3, 1, 2	Ground	7/2	5/2			30 982.7	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	6, 0, 6← 5, 1, 5	Ground					30 984.37	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	2, 1, 2← 1, 1, 1	Excited					30 985.7	.1
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	10, 3, 7←10, 2, 8	Ground	23/2	23/2			30 988.90	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	10, 3, 7←10, 2, 8	Ground	17/2	17/2			30 988.90	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	10, 3, 7←10, 2, 8	Ground	21/2	21/2			30 988.90	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	10, 3, 7←10, 2, 8	Ground	19/2	19/2			30 988.90	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	5, 2, 3← 5, 1, 4	Ground					30 990.50	.1
g-C ¹² H ₂ Cl ³⁵ C ¹² H ₂ Cl ³⁵	3- 451	6, 1, 6← 5, 0, 5						30 992.	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						30 992.18	.1
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	10, 3, 7←10, 2, 8	Ground	17/2		17/2		30 995.70	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	10, 3, 7←10, 2, 8	Ground	21/2		21/2		30 995.70	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	10, 3, 7←10, 2, 8	Ground	23/2		23/2		30 995.70	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	10, 3, 7←10, 2, 8	Ground	19/2		19/2		30 995.70	.2
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Ground					30 996.5	
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 0, 4← 3, 0, 3	Ground					30 997.1	.5
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					30 997.5	.1
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					31 000.	20.
C ¹² D ₃ Br ⁷⁹	4- 403	2, 0← 1, 0	Ground	3/2		1/2		31 002.43	.10
HC ¹² O ¹⁶ O ¹⁸ H	3- 77	6, 1, 6← 6, 1, 5	Ground					31 003.73	.1
S ³⁴ O ₂ ¹⁶	4-1833	4, 0, 4← 3, 1, 3	Ground					31 011.19	.05
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Excited					31 012.82	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 015.	5.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 0, 4← 3, 0, 3	Ground					31 016.82	.1
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Excited					31 017.20	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						31 023.24	.1
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	7, 2, 5← 7, 1, 6	Ground					31 024.20	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					31 024.47	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 025.99	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 026.88	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 031.88	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 034.24	.1
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Excited					31 042.2	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	2, 1, 2← 1, 0, 1						31 043.76	.2
(C ¹² H ₃) ₃ Si ²⁸ D	3- 872	3, ← 2,	Excited					31 047.5	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 050.	5.
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	2, 1, 2← 1, 0, 1						31 050.39	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 051.0	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					31 052.99	
Si ²⁹ D ₂ F ₂ ¹⁹	4-1604	4, 2, 3← 4, 1, 4	Ground					31 054.52	.10
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	6, 6, 1← 6, 5, 1	Ground					31 055.	10.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 055.	5.
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	2, 1, 1← 2, 0, 2	Ground					31 061.8	.2
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Excited					31 062.06	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Excited					31 063.97	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground					31 064.3	
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	4, 1, 4← 3, 0, 3	Ground					31 064.53	.1
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Excited					31 064.68	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 065.	5.
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	4, 1, 4← 3, 0, 3	Ground					31 065.70	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	12, 1, 11←12, 0, 12	Ground	21/2		21/2		31 066.54	.2
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	4, 1, 4← 3, 0, 3	Ground					31 066.86	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 067.	5.
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	12, 1,11←12, 0,12	Ground		27/2		27/2	31 067.32	.2
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	1, 1, 1← 0, 0, 0	Ground					31 067.80	.10
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	2, 0, 2← 1, 0, 1	Ground					31 067.9	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 068.24	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground					31 070.3	.05
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	12, 1,11←12, 0,12	Ground					31 070.41	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground	1			2	31 071.44	.05
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	6, 1, 5← 6, 0, 6	Excited					31 072.20	.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		2		3	31 072.25	.05
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	2, 2, 1← 2, 1, 2	Ground					31 072.85	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		3		4	31 073.21	.05
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	12, 1,11←12, 0,12	Ground		23/2		23/2	31 073.42	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		1		2	31 073.95	.05
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	12, 1,11←12, 0,12	Ground		25/2		25/2	31 074.25	.2
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		1		1	31 074.45	.05
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 0, 4← 3, 0, 3	Ground		5/2		5/2	31 074.8	
DN ¹⁴ O ₃ ¹⁶	3- 32	2, 1, 2← 1, 0, 1	Ground					31 075.40	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground					31 075.5	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		1		2	31 077.12	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		2		3	31 077.85	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		3		4	31 078.95	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		1		2	31 079.52	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	1, 1← 2, 0	Ground		1		1	31 080.20	.05
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 0, 5← 4, 1, 4	Excited					31 080.55	.03
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 085.	5.
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Excited					31 086.8	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 090.	5.
C ¹² H ₃ Si ²⁹ HF ₂ ¹⁹	3- 193	3, 1, 2← 2, 1, 1	Ground					31 091.11	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						31 092.46	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 095.0	.2
(C ¹² H ₃) ₃ C ¹³ H	3-1002	2, ← 1,						31 095.18	.10
(C ¹³ H ₃)(C ¹² H ₃)O ¹⁶	3- 594	2, 1, 1← 2, 0, 2	Ground					31 096.3	.2
(C ¹² H ₃) ₃ C ¹² H	3-1001	2, ← 1,	Ground					31 098.35	.03
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 103.	1.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Ground					31 106.3	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 109.	5.
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						31 110.	10.
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Ground					31 110.67	.1
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	9, 3, 6← 9, 2, 7	Ground		19/2		19/2	31 115.92	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	9, 3, 6← 9, 2, 7	Ground		17/2		17/2	31 119.74	.15
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 1, 3← 2, 1, 2	Ground		5/2		3/2	31 121.14	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 1, 3← 2, 1, 2	Ground		7/2		5/2	31 121.14	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 192	3, 1, 2← 2, 1, 1	Ground					31 123.75	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 1, 3← 2, 1, 2	Ground		3/2		1/2	31 123.80	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 1, 3← 2, 1, 2	Ground	9/2		7/2		31 123.80	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 1, 3← 2, 1, 2	Ground	5/2		5/2		31 123.80	
C ¹² H ₃ Si ²⁸ HF ¹⁹ ₂ -A	3- 191	3, 1, 2← 2, 1, 1	Ground					31 124.90	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 125.	20.
P ³¹ F ₃ ¹⁹	4-1681	Not Reported	Excited					31 130.	.10
C ¹² H ₃ Si ^b H ₂ D	3- 325	12, 1, 11← 12, 1, 12						31 130.43	
(C ¹² H ₃) ₃ C ¹² H	3-1001	2, ← 1,	Ground					31 130.99	.03
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 0, 5← 4, 1, 4	Excited					31 134.21	.03
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 135.	20.
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	3, ← 2,	Excited					31 136.0	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						31 139.9	.5
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	9, 0, 9← 8, 1, 8	Ground					31 140.	5.
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						31 140.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					31 140.5	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 0, 5← 4, 1, 4	Ground					31 140.55	.03
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	9, 3, 6← 9, 2, 7	Ground	21/2		21/2		31 141.07	.15
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 145.	20.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	9, 3, 6← 9, 2, 7	Ground	15/2		15/2		31 145.05	.15
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 0, 4← 3, 0, 3	Ground					31 149.42	.1
C ¹² H ₃ C ¹² :C ¹² D	4-1045	2, 1← 1, 1	Ground					31 152.00	.10
C ¹² H ₃ C ¹² :C ¹² D	4-1045	2, 0← 1, 0	Ground					31 152.56	.10
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	3, 0, 3← 2, 1, 2	Ground					31 153.16	
C ¹² HDCl ³⁵ Si ²⁸ H ₃	3- 236	5, 1, 4← 4, 1, 3	Ground					31 156.99	.2
(C ¹² H ₃) ₃ C ¹² H	3-1001	2, ← 1,	Ground					31 157.46	.03
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 0, 4← 3, 0, 3	Ground					31 157.90	.1
(C ¹² H ₃) ₃ C ¹² H	3-1001	2, ← 1,	Excited					31 161.	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						31 162.	3.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 0, 4← 3, 0, 3	Ground					31 165.00	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 167.79	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 168.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 168.63	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	2, 1, 2← 1, 1, 1	Ground					31 171.36	.2
t-C ¹² H ₃ C ¹² H:C ¹² HD	3- 746	2, 1, 2← 1, 1, 1	Ground					31 174.64	.05
t-C ¹² H ₃ C ¹² H:C ¹² HD	3- 746	2, 1, 2← 1, 1, 1	Ground					31 175.18	.05
(C ¹² H ₃) ₃ C ¹² H	3-1001	2, ← 1,	Excited					31 180.	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	2, 1, 1← 2, 0, 2	Excited					31 180.	20.
D ₂ O ₂ ¹⁶	3- 42	Not Reported						31 181.	3.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						31 182.88	.1
(C ¹² H ₃) ₃ C ¹² I ¹²⁷	3- 991	10, ← 9,	Ground					31 185.	30.
t-C ¹² H ₃ C ¹² H:C ¹² HD	3- 746	2, 1, 1← 1, 1, 0	Ground					31 185.46	.05
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 0, 5← 4, 1, 4	Ground					31 185.84	.03
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	2, 0, 2← 1, 0, 1	Excited					31 187.2	.1
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	4, 2, 2← 3, 1, 2	Ground					31 187.4	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 192.	5.
N ¹⁴ O ₂ ¹⁶ F ¹⁹	4-1581	2, 0, 2← 1, 0, 1	Ground					31 192.3	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	10, 3, 7←10, 2, 8	Ground					31 193.77	.1
P ³¹ F ₃ ¹⁹	4-1681	Not Reported	Excited					31 194.	5.0
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	9, 4, 6← 9, 3, 6	Ground	15/2		15/2		31 194.9	.05
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	10, 3, 7←10, 2, 8	Ground					31 195.35	.1
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	9, 4, 6← 9, 3, 6	Ground	21/2		21/2		31 195.8	.05
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	10, 3, 7←10, 2, 8	Ground					31 196.34	.1
a-C ¹² H ₂ DC ¹² O ¹⁶ Cl ³⁵	3- 366	10, 3, 7←10, 2, 8	Ground					31 197.88	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 3, 2← 3, 3, 1	Ground					31 199.71	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	Not Reported	Ground					31 200.	20.
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	9, 4, 6← 9, 3, 6	Ground	17/2		17/2		31 200.1	.05
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	7, 1, 6← 7, 1, 7	Ground					31 201.	1.
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	9, 4, 6← 9, 3, 6	Ground	19/2		19/2		31 201.0	.05
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 4← 4, 1, 3	Ground					31 203.74	.2
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	5, 2, 3← 4, 2, 2	Ground					31 204.35	.2
C ¹² H ₃ O ¹⁶ H	3- 211	21, 2, ←21, 1,	Ground					31 209.75	.1
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 2, 2← 3, 2, 1	Ground					31 218.09	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					31 220.80	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					31 221.20	
P ³¹ F ₃ ¹⁹	4-1681	Not Reported	Excited					31 224.	3.0
C ¹² H ₂ Cl ₂ ³⁷	4- 343	6, 1, 5← 6, 0, 6	Ground					31 225.	5.
C ¹² H ₃ O ¹⁶ H	3- 211	19, 2, ←19, 1,	Ground					31 226.70	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 0, 5← 4, 1, 4	Ground					31 227.04	.03
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 2, 2← 3, 2, 1	Ground	7/2		7/2		31 229.5	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		31 229.5	
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	4, 0, 4← 3, 1, 3	Ground					31 229.94	.2
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	3, 0, 3← 2, 1, 2	Ground					31 233.01	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	10, 1, 9←10, 1,10	Ground					31 235.60	
P ³¹ F ₃ ¹⁹	4-1681	Not Reported	Excited					31 237.	3.0
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Excited					31 242.98	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 2, 2← 3, 2, 1	Ground	9/2		9/2		31 243.5	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 2, 2← 3, 2, 1	Ground	9/2		7/2		31 243.5	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Ground	5/2		5/2		31 244.2	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 3, 2← 3, 3, 1	Excited	7/2		7/2		31 252.3	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 252.87	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Excited	7/2		7/2		31 259.6	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 3, 2← 3, 3, 1	Ground	9/2		7/2		31 262.4	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 0, 5← 4, 1, 4	Ground					31 263.84	.03
F ¹⁹ HC ¹² O ¹⁸	4- 274	5, 0, 5← 4, 1, 4	Ground					31 267.2	.2
(C ¹² H ₃) ₂ C ¹² :C ¹³ H ₂	3- 946	3, 1, 3← 2, 0, 2	Ground					31 268.52	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Excited					31 271.22	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Excited	7/2		7/2		31 274.8	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 3, 2← 3, 3, 1	Ground	7/2		7/2		31 275.0	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	5, 1, 4← 4, 1, 3	Ground					31 275.86	.2
P ³¹ F ₃ ¹⁹	4-1681	2, ← 1,	Ground					31 279.60	.10
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	5, 2, 3← 5, 1, 4	Ground					31 280.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Excited	11/2		9/2		31 280.4	
N ¹⁴ O ₂ F ¹⁹	4-1581	3, 2, 2← 3, 0, 3	Ground					31 282.1	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		31 282.66	.10
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	2, 1, 1← 1, 1, 0	Ground					31 283.38	.2
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	7/2		5/2		31 285.27	.10
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Excited	5/2		3/2		31 286.0	
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	25, 4, 21←26, 3, 24	Ground					31 288.	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						31 288.35	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Excited	9/2		7/2		31 290.3	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2← 3, 3, 1	Ground	5/2		3/2		31 291.5	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Excited	11/2		9/2		31 291.6	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	5/2		3/2		31 291.62	.10
P ³¹ F ₃ ¹⁹	4-1681	Not Reported	Excited					31 294.	2.0
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	5/2		3/2		31 294.25	.10
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		31 295.17	.10
C ¹² HCl ₃ ³⁷	4- 263	5, ← 4,	Ground					31 295.4	.4
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Ground	7/2		7/2		31 295.8	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Ground	7/2		7/2		31 296.1	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Excited					31 297.15	.12
Si ²⁸ H ₂ F ₂ ¹⁹	4-1601	1, 1, 1← 0, 0, 0	Excited					31 297.65	.10
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	9/2		7/2		31 297.67	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 299.81	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 300.41	.1
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Excited	9/2		7/2		31 301.0	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	3/2		1/2		31 303.94	.10
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 0, 4← 3, 0, 3	Ground	7/2		7/2		31 305.1	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2← 3, 3, 1	Ground	9/2		9/2		31 305.1	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Excited	7/2		5/2		31 305.7	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	3/2		1/2		31 306.46	.10
P ³¹ F ₃ ¹⁹	4-1681	Not Reported	Excited					31 307.	3.0
HC ¹² O ¹⁸ O ¹⁶ H	3- 76	6, 1, 6← 6, 1, 5	Ground					31 309.00	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		31 311.95	.10
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹³ H	3-1073	6, ← 5,	Ground					31 312.1	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Excited	7/2		5/2		31 312.97	.10
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Ground	11/2		9/2		31 313.2	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Ground	7/2		5/2		31 314.48	.10
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3← 3, 2, 2	Excited	5/2		3/2		31 316.1	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3← 3, 2, 2	Excited	5/2		5/2		31 316.1	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		31 316.4	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Ground	5/2		3/2		31 317.1	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Ground					31 318.52	.08
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Ground	5/2		3/2		31 320.82	.10
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		31 321.8	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Excited	5/2		3/2		31 321.86	.10
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Ground					31 322.27	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Ground	9/2	7/2			31 322.5	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Ground	5/2	3/2			31 323.36	.10
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			31 324.37	.10
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Excited	9/2	7/2			31 325.49	.10
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	3, 1, 3← 2, 0, 2	Ground					31 325.69	
O ¹⁶ F ₂ ¹⁹	4-1611	33, 8,25←34, 7,28	Ground					31 325.95	.10
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2← 3, 3, 1	Excited	11/2	9/2			31 326.2	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Ground	9/2	7/2			31 326.2	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Ground	9/2	7/2			31 326.78	.10
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	9, 3, 6← 9, 2, 7	Ground	19/2	19/2			31 326.92	.15
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Ground	7/2	5/2			31 327.1	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 0, 4← 3, 0, 3	Excited	11/2	9/2			31 327.65	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 0, 4← 3, 0, 3	Excited	9/2	7/2			31 327.65	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					31 328.0	
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	5, 1, 4← 4, 1, 3	Ground	9/2 11/2	7/2 9/2			31 329.88	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	9, 3, 6← 9, 2, 7	Ground	17/2	17/2			31 330.21	.15
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	5, 1, 4← 4, 1, 3	Ground					31 330.29	.2
C ¹³ H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 233	5, 1, 4← 4, 1, 3	Ground	7/2 13/2	5/2 11/2			31 330.68	.05
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					31 331.7	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4← 3, 1, 3	Ground	7/2	5/2			31 331.8	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Ground	3/2	1/2			31 333.03	.10
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Excited	3/2	1/2			31 333.95	.10
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3← 3, 2, 2	Excited	11/2	9/2			31 334.6	
P ³¹ F ₃ ¹⁹	4-1681	Not Reported	Excited					31 335.	3.0
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Ground	3/2	1/2			31 335.62	.10
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3← 3, 2, 2	Ground	5/2	5/2			31 339.9	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3← 3, 2, 2	Ground	5/2	3/2			31 339.9	
C ¹³ H ₃ O ¹⁶ H	3- 213	16, 2, ←16, 1,	Ground					31 342.31	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Excited	7/2	5/2			31 345.78	.10
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2← 3, 3, 1	Ground	11/2	9/2			31 346.6	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 0, 4← 3, 0, 3	Ground	11/2	9/2			31 347.4	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 0, 4← 3, 0, 3	Ground	9/2	7/2			31 347.4	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	9, 3, 6← 9, 2, 7	Ground	21/2	21/2			31 348.15	.15
C ¹³ H ₃ O ¹⁶ H	3- 213	24, 2, ←24, 1,	Ground					31 350.19	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 0, 4← 3, 0, 3	Ground					31 351.06	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	9, 3, 6← 9, 2, 7	Ground	15/2	15/2			31 351.55	.15
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1← 2, 2, 0	Excited	5/2	3/2			31 354.66	.10
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3← 3, 2, 2	Ground	11/2	9/2			31 357.0	
C ¹² H ₃ O ¹⁶ H	3- 211	20, 2, ←20, 1,	Ground					31 358.31	.1
P ³¹ F ₃ ¹⁹	4-1681	Not Reported	Excited					31 359.	3.0
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2← 2, 2, 1	Ground	7/2	5/2			31 359.15	.1
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	5, 1, 4← 4, 1, 3	Ground					31 360.87	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 2← 3, 2, 1	Ground	5/2	5/2			31 365.1	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 2← 3, 2, 1	Ground	5/2	3/2			31 365.1	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3← 3, 1, 2	Excited	9/2	9/2			31 367.3	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2 ← 2, 2, 1	Ground	5/2	3/2			31 367.95	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2 ← 2, 2, 1	Ground					31 368.07	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3 ← 3, 2, 2	Excited	7/2	5/2			31 368.7	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3 ← 3, 2, 2	Excited	7/2	7/2			31 368.7	
a-C ¹² H ₂ DSi ²⁸ HF ¹⁹ ₂	3- 204	4, 1, 4 ← 3, 1, 3	Ground					31 370.12	2.
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2 ← 2, 2, 1	Ground	9/2	7/2			31 371.65	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2 ← 3, 3, 1	Excited	7/2	5/2			31 374.2	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3 ← 3, 2, 2	Ground					31 374.41	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 378.7	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 2 ← 2, 2, 1	Ground	3/2	1/2			31 380.55	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2 ← 3, 3, 1	Ground					31 381.76	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 2 ← 3, 2, 1	Ground	11/2	9/2			31 382.2	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3 ← 3, 2, 2	Ground	7/2	7/2			31 388.4	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3 ← 3, 2, 2	Ground	7/2	5/2			31 388.4	
c-C ¹² HD:C ¹² HBr ⁸¹	4- 742	4, 1, 3 ← 3, 1, 2	Ground	9/2	9/2			31 388.9	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1 ← 2, 2, 0	Ground	7/2	5/2			31 391.53	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 2 ← 3, 2, 1	Ground					31 399.58	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2 ← 3, 3, 1	Ground	7/2	5/2			31 399.7	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1 ← 2, 2, 0	Ground					31 400.29	.1
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1 ← 2, 2, 0	Ground	5/2	3/2			31 400.44	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					31 400.6	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 4 ← 3, 1, 3	Ground	9/2	9/2			31 403.6	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4 ← 3, 1, 3	Ground	5/2	5/2			31 403.6	
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1 ← 2, 2, 0	Ground	9/2	7/2			31 403.78	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3 ← 3, 2, 2	Ground	9/2	7/2			31 404.85	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 3 ← 3, 2, 2	Ground	9/2	9/2			31 404.85	
C ¹² H ₂ Cl ³⁵ F ³⁷	4- 342	6, 1, 5 ← 6, 0, 6	Ground					31 405.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 407.	5.
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1 ← 1, 1	Excited					31 409.64	
C ¹² H ₃ Si ²⁸ Cl ³⁵ Cl ³⁷	3- 113	9, , ← 8, ,						31 410.	10.
C ¹² H ₃ C ¹² H ₂ Cl ³⁵	3- 541	3, 2, 1 ← 2, 2, 0	Ground	3/2	1/2			31 412.5	.1
S ³³ P ³¹ F ¹⁹ ₃	4-1692	6, ← 5,	Ground					31 412.7	.3
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 2 ← 3, 2, 1	Ground	7/2	5/2			31 413.4	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 2 ← 3, 2, 1	Ground	7/2	7/2			31 413.4	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 414.80	
S ³² O ¹⁶ F ¹⁹ ₂	4-1621	Not Reported						31 418.02	.1
HC ¹² *:C ¹² HO ¹⁶ C ¹² O ¹⁶ O ¹⁶ *	4- 931	5, 1, 5 ← 4, 1, 4	Ground					31 420.68	.10
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3 ← 3, 1, 2	Ground	5/2	5/2			31 422.4	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						31 422.9	.5
N ¹⁴ H ₃	4-1771	12,12 ← 12,12	Ground					31 424.97	.10
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4 ← 3, 1, 3	Excited	7/2	7/2			31 428.7	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 2 ← 3, 2, 1	Ground	9/2	7/2			31 430.1	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 2, 2 ← 3, 2, 1	Ground	9/2	9/2			31 430.1	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Ground					31 431.50	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 440.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						31 446.05	.1
C ¹² DBr ₃ ⁸¹	4- 244	13, ←12,	Ground					31 447.3	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 448.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 450.2	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Excited	11/2		9/2		31 453.6	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2← 3, 3, 1	Ground	9/2		7/2		31 455.2	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 0← 1, 0	Excited					31 455.80	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Excited	5/2		3/2		31 460.2	
O ¹⁶ F ₂ ¹⁹	4-1611	15, 2,13←16, 1,16	Ground					31 461.07	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	44,22, ←43,23,	Ground					31 464.36	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					31 464.9	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	44,22, ←43,23,	Ground					31 464.96	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 465.	5.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Ground	7/2		7/2		31 465.4	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					31 465.89	.1
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 468.06	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 3, 2← 3, 3, 1	Ground	7/2		7/2		31 470.1	
C ¹² *D ₂ S ³² C ¹² *D ₂	4- 853	2, 0, 2← 1, 0, 1	Ground					31 474.8	.2
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Excited	11/2		9/2		31 475.9	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 476.5	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Ground	7/2		7/2		31 477.4	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						31 479.26	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 479.3	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Excited	5/2		3/2		31 480.7	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	4, 2, 2← 4, 1, 3	Ground					31 481.59	.10
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Excited					31 482.30	.25
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁷	3- 774	15, 2,13←15, 1,14	Ground					31 482.71	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						31 483.57	.1
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 485.02	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	20, 9, ←19,10,	Ground					31 486.76	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Excited	9/2		7/2		31 487.0	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	20, 9, ←19,10,	Ground					31 487.41	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	20, 9, ←19,10,	Ground					31 487.79	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 489.3	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂	4- 863	Not Reported						31 490.	10.
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					31 490.0	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Ground	11/2		9/2		31 490.0	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Excited					31 492.42	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Excited	7/2		5/2		31 492.7	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 493.42	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 496.2	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Ground	5/2		3/2		31 496.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Ground					31 497.07	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Ground	11/2		9/2		31 497.7	
F ₃ ¹⁹ B ^b :N ^b (C ¹² H ₃) ₃	3- 801	9, ← 8,						31 500.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 500.8	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Ground	9/2		7/2		31 501.7	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Ground	5/2		3/2		31 502.2	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Ground					31 503.89	.17
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Ground	7/2		5/2		31 508.25	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Ground	9/2		7/2		31 508.6	
C ^b H ₂ ClF ^b	4- 333	Not Reported						31 509.67	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Ground	7/2		5/2		31 514.3	
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	5, 1, 5← 4, 1, 4	Ground					31 519.18	.2
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Excited					31 520.26	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 520.92	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 522.7	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 527.2	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 529.9	
C ^b H ₂ ClF ^b	4- 333	Not Reported						31 535.33	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	8, 7, 1← 8, 6, 2	Ground					31 540.	10.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 540.4	
C ¹² H ₃ C ¹² O ¹⁸ C ¹² N ¹⁴	3- 674	11, 4, 7←11, 3, 8	Ground					31 542.42	.2
C ¹² H ₂ F ₂ ¹⁹	4- 351	3, 2, 2← 4, 1, 3	Ground					31 543.75	.10
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 549.10	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 555.09	
C ¹³ D ₃ Si ²⁸ D ₃	3- 322	2, ← 1,						31 558.70	.3
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 563.8	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	5, 3, 2← 6, 2, 5	Ground					31 564.84	.10
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Excited					31 565.0	
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 4← 4, 0, 4	Ground					31 565.45	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 567.9	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						31 570.	10.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 571.8	
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	4, , ← 4, ,	Ground					31 575.1	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 575.4	
C ¹² H ₂ Cl ₂ ³⁵	4- 341	6, 1, 5← 6, 0, 6	Ground					31 577.	5.
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	3, 0, 3← 2, 0, 2	Ground					31 577.4	1.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					31 583.41	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					31 583.87	
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	4, 1, 3← 3, 1, 2	Ground	9/2		9/2		31 588.2	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Excited					31 588.6	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 590.	5.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 4← 3, 1, 3	Ground	9/2		9/2		31 594.8	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 605.10	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	2, 0, 2← 1, 0, 1	Ground					31 605.4	.1
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 609.10	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 609.10	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 0, 3← 2, 0, 2	Ground	7/2		7/2		31 611.34	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 615.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 0, 3← 2, 0, 2	Ground		3/2		1/2	31 620.48	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 0, 3← 2, 0, 2	Ground		3/2		5/2	31 620.48	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 0, 3← 2, 0, 2	Ground		7/2		5/2	31 623.50	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 0, 3← 2, 0, 2	Ground		9/2		7/2	31 623.50	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	2, 2, 0← 3, 2, 1	Ground		5/2		5/2	31 623.50	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	2, 2, 0← 3, 2, 1	Ground		3/2		5/2	31 623.50	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	15, 1,14←15, 1,15	Ground					31 627.4	.5
C ¹² H ₃ Si ^b HD ₂	3- 326	12, 1,11←12, 1,12						31 627.61	.2
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	3, 0, 3← 2, 0, 2	Ground					31 628.73	.10
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 0, 3← 2, 0, 2	Ground		5/2		5/2	31 628.97	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	15, 1,14←15, 1,15	Ground					31 630.6	.5
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	2, 2, 0← 3, 2, 1	Ground		3/2		3/2	31 632.28	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	2, 2, 0← 3, 2, 1	Ground		7/2		5/2	31 632.28	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	2, 2, 0← 3, 2, 1	Ground		5/2		3/2	31 632.28	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 0, 3← 2, 0, 2	Ground		3/2		3/2	31 632.28	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	11, 3, 8←12, 2,11	Ground	10			11	31 633.09	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	11, 3, 8←12, 2,11	Ground	12			13	31 633.09	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	11, 3, 8←12, 2,11	Ground	11			12	31 633.42	.10
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 635.	
C ¹² HBr ₃ ⁸¹	4- 242	13, ←12,	Ground					31 649.9	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 650.	5.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	3, 2, 2← 3, 0, 3	Ground					31 652.05	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	4, , ← 3, ,						31 656.2	.5
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 4← 4, 0, 4	Ground					31 656.92	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 658.	5.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					31 673.05	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 675.02	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					31 677.3	.2
a-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 204	3, 2, 1← 2, 2, 0	Ground					31 678.18	2.
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	3, 0, 3← 2, 0, 2	Ground					31 681.20	.10
C ¹² ₄ H ₂ C ¹² D:C ¹² ₄ D	4-1033	1, 0, 1← 0, 0, 0	Ground					31 687.4	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 688.5	
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	5, 1, 5← 4, 0, 4	Ground					31 690.10	.2
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 694.5	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 694.5	
F ₂ ¹⁹ O ₂ ¹⁸	3- 13	2, 1, 2← 1, 0, 1	Ground					31 697.0	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 703.	5.
(C ¹² H ₃) ₂ O ¹⁸	3- 595	3, 1, 2← 3, 0, 3	Ground					31 706.2	.5
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 4← 4, 0, 4	Ground					31 716.25	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 717.	5.
I ¹²⁷ C ¹³ N ¹⁴	4- 512	5← 4	Ground		7/2		5/2	31 718.28	
C ¹² H ₃ Ce ⁷⁶ D ₃	3- 307	2, 0← 1, 0	Ground					31 720.45	.10
C ¹² H ₃ Ce ⁷⁴ D ₃	3- 293	2, 0← 1, 0	Ground					31 729.5	.10
C ¹² ₄ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	2, 0, 2← 1, 0, 1	Excited					31 730.	3.
I ¹²⁷ C ¹³ N ¹⁴	4- 512	5← 4	Ground		9/2		7/2	31 730.50	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ Ge ⁷⁴ D ₃	3- 293	2, 0← 1, 0	Ground					31 730.7	.10
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						31 740.	10.
I ¹²⁷ C ¹³ N ¹⁴	4- 512	5← 4	Ground	5/2		3/2		31 741.50	
O ¹⁶ F ₂ ¹⁹	4-1611	32, 6,26←31, 7,25	Ground					31 744.90	.10
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, 1← 1, 1	Excited					31 747.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 751.	5.
C ¹³ H ₃ C ¹² H ₃ C ¹² :C ¹² H ₂	3- 945	2, 2, 1← 1, 1, 0	Ground					31 752.65	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						31 755.	10.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					31 757.42	.1
C ¹² H ₃ C ¹² HDC ¹² H ₃	3- 784	6, 1, 5← 6, 0, 6	Ground					31 759.70	.06
I ¹²⁷ C ¹³ N ¹⁴	4- 512	5← 4	Ground	11/2		9/2		31 763.34	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	3, 0, 3← 2, 1, 2	Ground					31 768.96	.05
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Excited					31 770.	
O ¹⁶ F ₂ ¹⁹	4-1611	10, 3, 7←11, 2,10	Ground					31 774.50	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 776.04	
C ¹² H ₂ F ₂ ¹⁹	4- 351	7, 3, 5← 8, 2, 6	Ground					31 777.75	.10
I ¹²⁷ C ¹³ N ¹⁴	4- 512	5← 4	Ground	15/2		13/2		31 783.31	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 784.	5.
HN ¹⁵ O ₃ ¹⁶	3- 33	2, 1, 2← 1, 0, 1	Ground					31 792.60	
HN ¹⁴ O ₃ ¹⁶	3- 31	2, 1, 2← 1, 0, 1	Ground					31 792.80	
I ¹²⁷ C ¹³ N ¹⁴	4- 512	5← 4	Ground	13/2		11/2		31 793.46	
C ¹² H ₃ Ge ⁷⁴ D ₃	3- 293	2, 0← 1, 0	Ground					31 800.35	.10
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² H	3-1077	6, 1, 6← 5, 1, 5	Ground					31 804.5	.1
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	12, 4, 8←12, 3, 9	Ground	25/2		25/2		31 811.40	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	12, 4, 8←12, 3, 9	Ground	23/2		23/2		31 811.40	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	12, 4, 8←12, 3, 9	Ground	21/2		21/2		31 811.40	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	12, 4, 8←12, 3, 9	Ground	27/2		27/2		31 811.40	.2
a-C ¹² H ₂ DC ¹² H:C ¹² H ₂	3- 742	2, 1, 2← 1, 1, 1	Ground					31 813.36	.05
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	3, 2, 2← 2, 2, 1	Ground					31 813.56	.10
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	18, 2,16←17, 3,15	Ground					31 816.40	.1
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	12, 4, 8←12, 3, 9	Ground	21/2		21/2		31 817.55	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	12, 4, 8←12, 3, 9	Ground	27/2		27/2		31 817.55	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	12, 4, 8←12, 3, 9	Ground	23/2		23/2		31 817.55	.2
C ¹² H ₃ C ¹² O ¹⁸ Cl ³⁵	3- 372	12, 4, 8←12, 3, 9	Ground	25/2		25/2		31 817.55	.2
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	18, 2,16←17, 3,15	Ground					31 818.03	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Excited	5/2		3/2		31 818.6	
C ¹² *H ₂ ^b S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						31 823.7	.5
s-C ¹² H ₂ DSi ²⁸ HF ₂ ¹⁹	3- 203	4, 1, 4← 3, 1, 3	Ground					31 824.00	2.
s-C ¹² H ₂ DC ¹² H ₃ C ¹² :C ¹² H ₂	3- 943	2, 2, 1← 1, 1, 0	Ground					31 828.82	.05
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	11, ←10,						31 831.6	.4
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Ground	5/2		5/2		31 834.4	
C ¹² H ₃ Si ²⁸ Cl ₃ ³⁵	3- 111	9, ← 8,						31 840.	20.
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	11, ←10,						31 842.1	.4
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					31 846.1	
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground	13/2		13/2		31 848.77	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Ground		5/2		3/2	31 849.5	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	2, ← 1,	Excited					31 852.	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	4, 2, 2← 4, 1, 3	Excited					31 852.40	.10
C ¹² D ₃ Si ²⁹ H ₂ F ¹⁹	3- 251	3, 2, 2← 2, 2, 1	Ground					31 854.5	.10
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	11, ←10,						31 856.2	.4
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Excited		5/2		3/2	31 859.0	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Excited		5/2		5/2	31 859.0	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Excited		7/2		7/2	31 859.3	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 859.54	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Ground		9/2		9/2	31 860.3	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	3, 2, 1← 2, 2, 0	Ground					31 862.31	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Excited		11/2		9/2	31 863.7	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Excited		11/2		9/2	31 872.85	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Excited		11/2		9/2	31 878.0	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	3, 1, 3← 2, 0, 2	Ground					31 879.31	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 880.2	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	11, ←10,	Ground					31 880.5	.3
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Excited		5/2		3/2	31 882.0	
C ¹² H ₃ Ce ⁷² D ₃	3- 292	2, 0← 1, 0	Ground					31 884.25	.10
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Ground		7/2		7/2	31 884.5	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Excited		11/2		9/2	31 886.1	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Excited		9/2		7/2	31 887.3	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						31 887.8	1.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Ground		5/2		3/2	31 889.95	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Ground		5/2		5/2	31 889.95	
S ³² P ³¹ F ₃ ¹⁹	4-1691	6, 5← 5, 5	Ground					31 891.13	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	6, 4← 5, 4	Ground					31 891.27	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	6, 3← 5, 3	Ground					31 891.45	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	6, 2← 5, 2	Ground					31 891.62	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	6, 1← 5, 1	Ground					31 891.62	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	6, 0← 5, 0	Ground					31 891.62	.05
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Excited		7/2		5/2	31 892.8	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Ground		11/2		9/2	31 894.55	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Excited		7/2		7/2	31 898.8	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Excited		7/2		5/2	31 898.8	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Ground		11/2		9/2	31 903.1	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Ground		11/2		9/2	31 903.95	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Ground		5/2		3/2	31 907.05	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Excited		7/2		5/2	31 907.2	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Ground					31 908.00	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 910.	5.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Excited		7/2		5/2	31 912.05	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Excited		7/2		7/2	31 912.05	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Ground		9/2		7/2	31 912.35	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	11, ←10,						31 913.2	.4

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Ground	11/2	9/2			31 917.0	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Ground					31 918.09	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Ground	7/2	5/2			31 918.1	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	11, ←10,						31 920.2	.4
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 921.	5.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						31 922.92	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Ground					31 923.19	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						31 924.32	.1
C ¹² D ₃ Si ³⁰ D ₃	3- 321	2, ← 1,						31 924.49	.15
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Excited	9/2	7/2			31 925.65	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Excited	9/2	9/2			31 925.65	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 2← 1, 1, 1	Ground					31 926.0	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 927.27	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	6, 2, 4← 6, 1, 5						31 927.71	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Ground	7/2	7/2			31 929.55	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Ground	7/2	5/2			31 929.55	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Ground					31 931.36	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						31 933.7	.5
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Ground	7/2	5/2			31 937.95	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	6, 2, 4← 6, 1, 5						31 938.43	.2
D ₂ O ₂ ¹⁶	3- 42	Not Reported						31 940.	3.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 940.	5.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Ground	7/2	7/2			31 942.8	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Ground	9/2	7/2			31 942.8	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 3← 3, 2, 2	Ground	9/2	9/2			31 942.8	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Ground	7/2	5/2			31 942.8	
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	1, 1, 1← 0, 0, 0	Ground					31 943.	
HDO ₂ ¹⁶	3- 43	13, , ←13, ,						31 952.	3.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Excited	9/2	7/2			31 952.4	
C ¹² D ₃ N ¹⁴ D ₂	3- 262	4, 1, 4← 4, 0, 4	Ground					31 954.11	
HDO ₂ ¹⁶	3- 43	13, , ←13, ,						31 956.	3.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Ground	9/2	9/2			31 956.2	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 2, 2← 3, 2, 1	Ground	9/2	7/2			31 956.2	
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Excited	9/2	9/2			31 962.6	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	5, 1, 4← 4, 1, 3	Ground					31 962.82	.2
C ¹² H ₂ DCe ⁷⁴ H ₃	3- 306	2, 1, 2← 1, 1, 1	Ground					31 965.84	.10
C ¹² H ₃ C ¹² HF ¹⁹ ₂	3- 461	2, 1, 1← 1, 0, 1	Ground					31 966.3	
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 1, 4← 3, 1, 3	Ground					31 967.61	.03
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 1, 4← 3, 1, 3	Ground					31 967.67	.03
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						31 970.	10.
C ¹² H ₃ Ge ⁷⁰ D ₃	3- 291	2, 0← 1, 0	Ground					31 972.02	.10
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Ground	5/2	5/2			31 972.8	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					31 977.82	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² C ¹² :C ¹² H	3-1077	6, 1, 5← 5, 1, 4	Ground					31 979.1	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	9, 2, 7← 8, 3, 6	Ground					31 980.	20.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						31 980.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 980.68	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Ground		9/2		7/2	31 983.25	
(C ¹² H ₃) ₃ Si ³⁰ H	3- 875	3, ← 2,	Ground					31 984.1	.3
C ¹² H ₂ :C ¹² DBr ⁸¹	4- 722	4, 1, 3← 3, 1, 2	Ground		9/2		9/2	31 984.65	
s-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 397	2, 1, 1← 1, 1, 0	Ground					31 989.25	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 989.58	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						31 990.0	25.
(C ¹² H ₃) ₃ C ¹² C ¹³ :C ¹² H	3-1074	6, ← 5,	Ground					31 990.5	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					31 994.74	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 3, 2← 3, 3, 1	Ground		7/2		7/2	31 995.00	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						32 000.0	25.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Excited		9/2		9/2	32 000.4	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 002.23	
s-C ¹² H ₂ DSi ²⁸ HF ¹⁹	3- 203	3, 2, 1← 2, 2, 0	Ground					32 002.61	2.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	8, 5, 4← 8, 5, 3	Excited					32 002.9	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	3, 1, 2← 2, 1, 1						32 003.26	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 004.	5.
C ¹³ H ₃ O ¹⁶ H	3- 213	17, 2, ←17, 1,	Ground					32 004.43	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	3, 1, 2← 2, 1, 1						32 008.80	.2
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Ground		5/2		5/2	32 009.00	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 011.70	
(C ¹² H ₃) ₂ C ¹² :C ¹² H ₂	3- 941	2, 2, 1← 1, 1, 0	Ground					32 015.95	.05
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Ground		5/2		3/2	32 016.6	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 021.14	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 022.71	
(C ¹² H ₃) ₃ Si ²⁹ H	3- 873	3, ← 2,	Ground					32 026.1	.2
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Ground		9/2		9/2	32 029.6	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					32 034.1	.2
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Excited		5/2		5/2	32 034.6	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Excited		5/2		3/2	32 034.6	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 034.82	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	8, 1, 8← 7, 2, 5	Ground					32 035.40	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Excited		11/2		9/2	32 039.4	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Excited		7/2		7/2	32 040.1	
(C ¹² H ₃) ₃ Si ²⁸ H	3- 871	3, ← 2,	Excited					32 040.2	.2
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	2, 1, 2← 1, 1, 1	Ground					32 040.91	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	8, 1, 8← 7, 2, 5	Ground					32 041.58	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 2, 2← 4, 1, 3	Ground					32 041.80	.1
(C ¹² H ₃) ₃ Si ²⁸ H	3- 871	3, ← 2,	Excited					32 043.3	.3
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 2← 1, 1, 1	Excited					32 043.4	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 4← 4, 4	Ground		11/2		9/2	32 046.03	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 047.20	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Excited		5/2		3/2	32 048.1	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Excited		5/2		5/2	32 048.1	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	2, 1, 1← 1, 1, 0	Ground					32 049.0	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 2, 2← 4, 1, 3	Ground					32 049.35	.1
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	2, 1, 2← 1, 1, 1	Ground					32 050.00	2.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 050.46	
O ¹⁶ F ₂ ¹⁹	4-1611	23, 4,20←22, 5,17	Ground					32 050.75	.10
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	8, 4, 4← 8, 4, 5	Ground					32 052.10	.2
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	19, 2,17←20, 1,20	Ground					32 054.	
a-C ¹² HD ₂ C ¹² O ¹⁶ F ¹⁹	3- 396	8, 4, 4← 8, 4, 5	Ground					32 054.10	.2
C ¹² H ₃ DGe ⁷⁴ H ₃	3- 306	2, 1, 2← 1, 1, 1	Ground					32 056.74	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 059.35	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 4← 4, 4	Ground	13/2	11/2			32 059.38	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Ground	5/2	5/2			32 065.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Ground	5/2	3/2			32 065.4	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 2, 2← 4, 1, 3	Ground					32 065.55	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Excited	11/2	9/2			32 066.2	
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	2, 1, 2← 3, 0, 3	Ground					32 068.90	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Ground	7/2	7/2			32 069.6	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 070.04	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 070.15	
(C ¹² H ₃) ₃ Si ²⁸ H	3- 871	3, ← 2,	Ground					32 070.2	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Ground	11/2	9/2			32 070.4	
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	2, 1, 2← 3, 0, 3	Ground					32 076.50	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Excited	9/2	7/2			32 077.1	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 078.93	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Ground	5/2	5/2			32 079.25	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Ground	5/2	3/2			32 079.25	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 081.32	
C ¹² H ₃ DGe ⁷² H ₃	3- 305	2, 1, 2← 1, 1, 1	Ground					32 081.95	.10
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Ground	11/2	9/2			32 082.5	
s-C ¹² DH ₂ C ¹² H ₂ C ¹² H ₃	3- 785	6, 1, 5← 6, 0, 6	Ground					32 083.91	.06
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Excited	7/2	5/2			32 084.5	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 084.51	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 085.74	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 2← 1, 1, 1	Excited					32 086.0	.2
C ¹² H ₃ DGe ⁷⁴ H ₃	3- 306	2, 0, 2← 1, 0, 1	Ground					32 087.40	.10
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	Not Reported						32 087.89	
O ^b O ^b O ^b	4-1847	Not Reported						32 090.	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Excited	7/2	5/2			32 091.5	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Ground	11/2	9/2			32 091.6	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 3← 4, 3	Ground	11/2	9/2			32 092.41	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Ground	11/2	9/2			32 095.8	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Ground	5/2	3/2			32 095.9	
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Ground					32 097.13	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 0, 4← 3, 0, 3	Ground	5/2	3/2			32 098.6	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 0, 4← 3, 0, 3	Ground	7/2	5/2			32 098.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Ground					32 099.42	
C ¹² H ₂ Cl ₂ ³⁷	4- 343	7, 1, 6← 7, 0, 7	Ground					32 100.	5.
(C ¹² H ₃) ₃ Si ²⁸ H	3- 871	3, ← 2,	Excited					32 101.2	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Ground	9/2		7/2		32 102.4	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	11, 4, ←12, 3,	Ground					32 104.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 104.0	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Ground					32 104.75	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 3← 4, 3	Ground	13/2		11/2		32 105.13	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Ground	7/2		5/2		32 109.55	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	11, ←10,						32 112.2	.4
S ³² O ¹⁸ F ₂ ¹⁹	4-1622	2, 1, 1← 1, 0, 1	Ground					32 112.44	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 112.7	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Ground					32 112.88	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Ground	7/2		5/2		32 113.0	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Ground	7/2		7/2		32 113.0	
C ¹² D ₃ Si ²⁹ D ₃	3- 319	2, ← 1,						32 115.25	.15
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	6, 4, 2← 6, 3, 3	Ground					32 116.2	.2
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	3, 2, 1← 2, 2, 0	Ground					32 117.38	.10
C ¹² H ₂ DGe ⁷⁴ H ₃	3- 306	2, 1, 1← 1, 1, 0	Ground					32 118.06	.10
C ¹² D ₃ N ¹⁴ D ₂	3- 262	1, 0, 1← 0, 0, 0	Ground					32 121.23	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Ground	7/2		5/2		32 122.2	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	11, ←10,						32 124.6	.4
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 2← 4, 2	Ground	11/2		9/2		32 125.17	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		32 126.35	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Ground	7/2		7/2		32 126.35	
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	10, 1, 9←10, 0,10	Ground					32 127.	5.
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 0← 4, 0	Ground	7/2		5/2		32 127.83	.1
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 1, 2← 2, 1, 1	Ground	7/2		5/2		32 129.17	
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 1, 2← 2, 1, 1	Ground	5/2		3/2		32 129.17	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Ground	9/2		9/2		32 129.4	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 3← 3, 2, 2	Ground	9/2		7/2		32 129.4	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 3← 4, 3	Ground	9/2		7/2		32 129.89	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 2← 4, 2	Ground	9/2		7/2		32 132.25	.1
N ¹⁴ O ¹⁸ Cl ³⁵	4-1453	3, 1, 2← 2, 1, 1	Ground	9/2		7/2		32 132.36	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 1← 4, 1	Ground	7/2		5/2		32 134.64	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 0← 4, 0	Ground	9/2		7/2		32 134.64	.1
O ₃ ¹⁸	4-1845	23, 2,22←22, 3,19	Ground					32 137.	
DN ¹⁴ O ₃ ¹⁶	3- 32	8, 5, 3← 8, 5, 4	Ground					32 137.90	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 2← 4, 2	Ground	13/2		11/2		32 138.83	.1
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 2← 1, 1, 1	Excited					32 138.9	.1
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	11, ←10,						32 139.0	.4
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						32 142.	10.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Ground	9/2		7/2		32 142.8	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 2, 2← 3, 2, 1	Ground	9/2		9/2		32 142.8	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 1← 4, 1	Ground	11/2		9/2		32 144.78	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Excited	9/2	7/2			32 145.8	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 0← 4, 0	Ground	11/2	9/2			32 151.21	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	17, 4, ←16, 5,	Ground					32 155.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 155.3	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 1← 4, 1	Ground	13/2	11/2			32 159.40	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Excited	7/2	7/2			32 159.7	
(C ¹² H ₃) ₃ Si ²⁸ H	3- 871	3, ← 2,	Excited					32 159.9	.2
t-C ¹² H ₃ C ¹² H:C ¹² HD	3- 746	2, 0, 2← 1, 0, 1	Ground					32 160.37	.05
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 0← 4, 0	Ground	15/2	13/2			32 161.12	.1
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	11, ←10,	Ground					32 162.0	.3
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Ground	5/2	5/2			32 164.2	
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 0← 4, 0	Ground	13/2	11/2			32 166.04	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 1← 4, 1	Ground	15/2	13/2			32 166.04	.1
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	6, 1← 5, 1	Ground					32 168.4	.1
C ¹² D ₃ Si ²⁸ D ₃	3- 318	2, ← 1,						32 170.41	.15
C ¹² H ₂ DGe ⁷² H ₃	3- 305	2, 1, 2← 1, 1, 1	Ground					32 173.40	.10
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Ground	9/2	7/2			32 176.65	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						32 178.	10.
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						32 178.0	.5
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	6, ← 5,	Ground					32 179.8	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 2← 4, 2	Ground	15/2	13/2			32 180.53	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	5, 1, 5← 4, 1, 4	Ground					32 181.45	.2
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 2← 1, 1, 1	Excited					32 182.	.2
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	6, ← 5,	Ground					32 184.3	.1
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					32 185.4	.2
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	6, 6, 0← 6, 5, 1	Ground					32 185.8	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	17, 4, ←16, 5,	Ground					32 187.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 187.0	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	2, 0, 2← 1, 0, 1	Ground					32 187.05	.1
C ¹² HC ¹³⁵ Cl ³⁷	4- 262	5, 4, 1← 4, 3, 1	Ground					32 187.3	.4
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	2, 0, 2← 1, 0, 1	Ground					32 187.52	.1
C ¹² H ₂ :C ¹² DBr ⁷⁹	4- 721	4, 1, 3← 3, 1, 2	Ground	9/2	9/2			32 188.9	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					32 189.7	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						32 190.	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 3, 2← 3, 3, 1	Ground	7/2	7/2			32 190.7	
a-C ¹² H ₂ DC ¹² O ¹⁶ F ¹⁹	3- 398	4, 1, 3← 4, 1, 4	Ground					32 191.8	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					32 192.21	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 193.	5.
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	11, ←10,						32 194.3	.4
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	6, ← 5,	Ground					32 198.0	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground	11/2	11/2			32 200.58	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	11, ←10,						32 202.2	.4
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground	7/2	5/2			32 203.57	
C ¹² H ₂ DGe ⁷⁰ H ₃	3- 304	2, 1, 2← 1, 1, 1	Ground					32 203.98	.10
C ¹² H ₂ DGe ⁷² H ₃	3- 305	2, 0, 2← 1, 0, 1	Ground					32 204.25	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 3← 4, 3	Ground	15/2		13/2		32 204.60	.1
C ¹² H ₂ DGe ⁷⁴ H ₃	3- 306	2, 1, 1← 1, 1, 0	Ground					32 209.10	.10
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground	9/2		7/2		32 215.56	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						32 220.	10.
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 0, 2← 1, 0, 1	Ground					32 223.3	.1
C ¹² DBr ₃ ⁷⁹	4- 243	13, ←12,	Ground					32 225.6	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground	5/2		3/2		32 226.85	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	7, 2, 6← 8, 1, 7	Ground					32 229.	5.
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	6, ← 5,	Excited					32 229.0	.1
c-C ¹² H ₃ C ¹² H:C ¹² HD	3- 745	2, 1, 2← 1, 1, 1	Ground					32 229.17	.05
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	2, 1, 2← 1, 1, 1	Ground					32 231.44	.1
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 3, 6←10, 2, 9	Ground					32 233.43	.2
D ₂ O ₂ ¹⁶	3- 42	Not Reported						32 234.	3.
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 3, 6←10, 2, 9	Ground					32 234.65	.2
C ¹² H ₂ DGe ⁷² H ₃	3- 305	2, 1, 1← 1, 1, 0	Ground					32 235.50	.10
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 3, 6←10, 2, 9	Ground					32 235.62	.2
C ¹² H ₂ Cl ³⁵ Si ²⁸ H ₃	3- 231	9, 3, 6←10, 2, 9	Ground					32 236.82	.2
Si ²⁸ H ₃ I ¹²⁷	4-1761	5, 4← 4, 4	Ground	15/2		13/2		32 237.95	.1
C ¹² D ₃ Si ²⁸ D ₃	3- 318	2, ← 1,						32 239.63	.15
P ³¹ O ¹⁶ Cl ₃ ³⁵	4-1511	8, ← 7,	Ground					32 242.9	.5
(C ¹² H ₃) ₃ Si ²⁸ H	3- 871	3, ← 2,	Excited					32 248.4	.2
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground	11/2		9/2		32 248.52	
(C ¹² H ₃) ₃ C ¹² C ¹² :C ¹² H	3-1071	6, 1← 5, 1	Excited					32 249.5	.1
O ^b O ^b O ^b	4-1847	Not Reported						32 254.	
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	6, 5, 2← 6, 3, 3	Ground					32 264.5	.3
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						32 267.4	.5
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground	15/2		13/2		32 268.33	
C ¹³ H ₃ O ¹⁶ H	3- 213	23, 2, ←23, 1,	Ground					32 271.10	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 278.04	
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground	13/2		11/2		32 278.55	
C ¹² Cl ₃ ³⁷ C ¹² N ¹⁴	4- 584	10, ← 9,	Ground					32 279.5	1.0
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 279.9	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						32 280.	3.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	11, 4, ←12, 3,	Ground					32 283.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 283.3	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 287.7	
c-HDN ¹⁵ C ¹² HO ¹⁶	3- 158	4, 0, 4← 3, 1, 3	Ground					32 289.71	
C ¹² H ₃ B ^b F ₂ ¹⁹	3- 91	3, , ← 2, ,	Ground					32 291.8	.1
C ¹² H ₂ DGe ⁷⁰ H ₃	3- 304	2, 1, 2← 1, 1, 1	Ground					32 295.85	.10
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	7, 4, 3← 7, 3, 4	Ground					32 296.	
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	6, 1, 5← 6, 1, 6	Ground	6		6		32 296.18	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						32 298.0	.5
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	6, 1, 5← 6, 1, 6	Ground	5		5		32 298.19	.1
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	6, 1, 5← 6, 1, 6	Ground	7		7		32 298.19	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 301.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ Si ²⁸ D ₃	3- 318	2, ← 1,						32 316.07	.15
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						32 325.	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	7, 1, 6← 7, 0, 7	Ground					32 325.	5.
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	7, 2, 5← 7, 1, 6						32 325.08	.2
C ¹² H ₂ DGe ⁷² H ₃	3- 305	2, 1, 1← 1, 1, 0	Ground					32 326.96	.10
C ¹² H ₂ DGe ⁷⁰ H ₃	3- 304	2, 0, 2← 1, 0, 1	Ground					32 327.55	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					32 332.64	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	7, 2, 5← 7, 1, 6						32 338.71	.2
C ¹² D ₃ C ¹² O ¹⁶ Cl ³⁷	3- 364	5, 0, 5← 4, 1, 4	Ground					32 346.0	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 3, 7← 8, 4, 4	Ground					32 347.36	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 3, 7← 8, 4, 4	Ground					32 347.71	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						32 350.	10.
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	6, 5← 5, 5	Ground					32 350.82	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	6, 4← 5, 4	Ground					32 351.47	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	6, 3← 5, 3	Ground					32 352.01	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	6, 2← 5, 2	Ground					32 352.36	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	6, 1← 5, 1	Ground					32 352.62	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	6, 0← 5, 0	Ground					32 352.62	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 0, 2← 1, 0, 1	Excited					32 358.6	.1
C ¹² H ₂ DGe ⁷⁰ H ₃	3- 304	2, 1, 1← 1, 1, 0	Ground					32 359.02	.10
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	2, 0, 2← 1, 0, 1	Ground					32 362.08	.1
s-C ¹² H ₂ DC ¹² H:C ¹² H ₂	3- 743	2, 1, 2← 1, 1, 1	Ground					32 364.93	.05
C ¹² *DHC ¹² H:C ¹² *H	4-1034	1, 0, 1← 0, 0, 0	Ground					32 368.0	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					32 379.37	.1
I ¹²⁷ C ¹² N ¹⁴	4- 511	5← 4	Ground		9/2		9/2	32 386.29	
Br ⁸¹ C ¹³ N ¹⁴	4- 144	4← 3	Ground		9/2		7/2	32 392.59	
Br ⁸¹ C ¹³ N ¹⁴	4- 144	4← 3	Ground		11/2		9/2	32 392.59	
g-C ¹² H ₃ C ¹² H ₂ C ¹² H ₂ Cl ³⁵	3- 773	15, 2,13←15, 1,14	Ground					32 394.45	.2
Li ⁷ Br ⁸¹	1-	1← 0	Excited		5/2		3/2	32 397.13	0.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					32 398.44	.1
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3← 3, 1, 2	Excited		5/2		5/2	32 399.0	
C ¹² H ₃ Ge ⁷⁴ HD ₂	3- 303	2, 1, 2← 1, 1, 1	Ground					32 400.66	.10
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 0, 2← 1, 0, 1	Excited					32 405.	2.
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	9, 7, 2← 9, 6, 3	Ground					32 406.3	
Br ⁸¹ C ¹³ N ¹⁴	4- 144	4← 3	Ground		5/2		3/2	32 409.06	
Br ⁸¹ C ¹³ N ¹⁴	4- 144	4← 3	Ground		7/2		5/2	32 409.06	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	33,16, ←32,17,	Ground					32 422.30	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	33,16, ←32,17,	Ground					32 422.83	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	33,16, ←32,17,	Ground					32 423.09	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					32 425.	20.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3← 3, 1, 2	Ground		5/2		5/2	32 438.2	
C ¹² HBr ₃ ⁷⁹	4- 241	13, ←12,	Ground					32 438.2	.5
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	8, 5, 4← 8, 5, 3	Ground					32 440.75	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					32 446.09	
C ¹² H ₃ C ¹² H ₂ F ₁ ¹⁹	3- 551	7, 1, 6← 7, 1, 7	Ground					32 449.89	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ^b ₂ N ^b H ^b C ^b ₂ H ^b ₂	4- 863	Not Reported			32 450.	10.
C ¹² H ₂ DCe ⁷⁰ H ₃	3- 304	2, 1, 1 ← 1, 1, 0	Ground		32 451.02	.10
C ¹² H ₃ O ¹⁶ N ¹⁴ O ¹⁶	3- 181	4, 2, 3 ← 3, 2, 2	Ground		32 461.38	.1
Li ⁷ Br ⁷⁹	1-	1 ← 0	Excited	5/2 3/2	32 461.52	0.10
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	8, ← 7,	Ground		32 464.8	.3
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Excited	11/2 9/2	32 470.1	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 0, 2 ← 1, 0, 1	Excited		32 471.3	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	5, 2, 3 ← 5, 1, 4			32 471.40	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Excited	5/2 3/2	32 478.1	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported			32 479.50	.1
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	5, 2, 3 ← 5, 1, 4			32 480.24	.2
C ¹² H ₃ Ge ⁷⁴ HD ₂	3- 303	2, 1, 2 ← 1, 1, 1	Ground		32 485.06	.10
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Ground	7/2 7/2	32 485.7	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Excited	7/2 5/2	32 488.0	
F ¹⁹ O ¹⁶ O ¹⁸	3- 12	2, 1, 2 ← 1, 0, 1	Ground		32 488.1	.5
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	2, 1, 1 ← 1, 1, 0	Ground		32 491.86	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			32 492.	5.
C ¹² H ₃ Ge ⁷² HD ₂	3- 302	2, 1, 2 ← 1, 1, 1	Ground		32 492.95	.10
(C ¹² D ₃) ₂ O ¹⁶	3- 592	1, 1, 1 ← 0, 0, 0	Ground		32 494.5	.2
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	4, 0, 4 ← 3, 0, 3	Ground	11/2 9/2	32 494.96	.2
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	4, 1, 4 ← 3, 1, 3	Ground	11/2 9/2	32 494.96	.2
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	4, 0, 4 ← 3, 0, 3	Ground	11/2 9/2	32 497.75	.2
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	4, 1, 4 ← 3, 1, 3	Ground	11/2 9/2	32 497.75	.2
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 0, 4 ← 3, 0, 3	Ground		32 498.28	.03
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 0, 4 ← 3, 0, 3	Ground		32 498.63	.03
C ¹² DC ¹³ ₃	4- 264	5, ← 4,	Ground		32 502.1	.4
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	4, 0, 4 ← 3, 0, 3	Ground	5/2 3/2	32 502.80	.2
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	4, 1, 4 ← 3, 1, 3	Ground	5/2 3/2	32 502.80	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Ground	11/2 9/2	32 503.8	
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	4, 0, 4 ← 3, 0, 3	Ground	9/2 7/2	32 506.10	.2
C ¹² H ₃ As ⁷⁵ F ¹⁹ ₂	3- 81	4, 1, 4 ← 3, 1, 3	Ground	9/2 7/2	32 506.10	.2
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Ground	5/2 3/2	32 508.5	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Ground		32 509.46	
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Ground	9/2 7/2	32 513.7	
F ¹⁹ HC ¹³ O ¹⁶	4- 273	1, 1, 1 ← 2, 0, 2			32 514.1	.1
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 2, 3 ← 3, 2, 2	Ground		32 517.58	.03
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3 ← 3, 1, 2	Ground	7/2 5/2	32 518.3	
C ¹² ₂ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 0, 2 ← 1, 0, 1	Excited		32 521.6	.1
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 3, 1 ← 3, 3, 0	Ground		32 525.0	.1
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 2, 3 ← 3, 2, 2	Ground		32 525.0	.1
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 3, 2 ← 3, 3, 1	Ground		32 525.0	.1
C ¹² ₂ H ₂ N ¹⁴ HC ¹² ₂	4- 861	8, 6, 2 ← 8, 5, 3	Ground		32 526.3	
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 2, 2 ← 3, 2, 1	Ground		32 528.1	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' F' F' F				Frequency MHz	Acc. ±MHz
C ¹² ₂ HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	4, 2, 3← 3, 2, 2	Ground					32 531.	
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 2, 2← 3, 2, 1	Ground					32 536.26	.03
S ³² P ³¹ Cl ₃ ³⁷	4-1534	12, ←11,	Ground					32 537.4	1.0
F ¹⁹ HC ¹³ O ¹⁶	4- 273	1, 1, 1← 2, 0, 2						32 544.1	.2
C ¹² H ₂ Cl ₂ ³⁵	4- 341	7, 1, 6← 7, 0, 7	Ground					32 546.	2.
C ¹² HCl ₂ ³⁵ Cl ³⁷	4- 262	5, 5, 0← 4, 4, 0	Ground					32 565.3	.4
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	5, 2, 3← 5, 2, 4	Ground					32 567.8	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 575.	5.
C ¹³ H ₃ O ¹⁶ H	3- 213	18, 2, ←18, 1,	Ground					32 575.53	.1
C ¹² H ₃ Ce ⁷² HD ₂	3- 302	2, 1, 2← 1, 1, 1	Ground					32 577.29	.10
Br ⁷⁹ C ¹³ N ¹⁴	4- 143	4← 3	Ground	9/2		7/2		32 581.73	
Br ⁷⁹ C ¹³ N ¹⁴	4- 143	4← 3	Ground	11/2		9/2		32 581.73	
C ¹² DHCl ₂ ³⁵	4- 344	10, 1, 9←10, 0,10	Ground					32 583.	2.
C ¹² H ₂ :C ¹² HBr ⁸¹	4- 728	4, 1, 3← 3, 1, 2	Ground		9/2		9/2	32 583.5	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	12, 3, 9←12, 2,10	Ground					32 586.38	.2
C ¹² H ₃ Ce ⁷⁰ HD ₂	3- 301	2, 1, 2← 1, 1, 1	Ground					32 589.79	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 592.	5.
C ¹² ₂ HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	4, 1, 3← 3, 1, 2	Ground					32 594.	
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	12, 3, 9←12, 2,10	Ground					32 594.33	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					32 595.16	
H ₂ N ¹⁵ C ¹² DO ¹⁶	3- 157	7, 1, 6← 6, 2, 5	Ground					32 595.74	
Br ⁷⁹ C ¹³ N ¹⁴	4- 143	4← 3	Ground	5/2		3/2		32 601.46	
Br ⁷⁹ C ¹³ N ¹⁴	4- 143	4← 3	Ground	7/2		5/2		32 601.46	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 3, 5← 8, 2, 6	Ground		17/2		17/2	32 602.01	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 3, 5← 8, 2, 6	Ground		15/2		15/2	32 607.52	.15
C ¹² HD ₂ Br ⁸¹	4- 408	2, 1, 2← 1, 1, 1	Ground		7/2		5/2	32 610.6	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Ground		5/2		5/2	32 612.0	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -E	3- 196	3, 2, 1← 2, 2, 0	Ground					32 622.61	
C ¹³ H ₃ Si ²⁸ HF ₂ ¹⁹ -A	3- 195	3, 2, 1← 2, 2, 0	Ground					32 622.61	
C ¹² HCl ₂ ³⁵ F ₂ ¹⁹	4- 251	5, 3, 2← 5, 2, 4	Ground		7/2		7/2	32 630.4	.05
C ¹² HCl ₂ ³⁵ F ₂ ¹⁹	4- 251	5, 3, 2← 5, 2, 4	Ground		13/2		13/2	32 632.4	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 633.	5.
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 3, 5← 8, 2, 6	Ground		19/2		19/2	32 633.34	.15
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 634.2	
C ¹² HCl ₂ ³⁵ F ₂ ¹⁹	4- 251	5, 3, 2← 5, 2, 4	Ground		9/2		9/2	32 637.6	.05
C ¹² H ₃ C ¹² O ¹⁶ Br ⁷⁹	3- 351	8, 3, 5← 8, 2, 6	Ground		13/2		13/2	32 638.93	.15
C ¹² HCl ₂ ³⁵ F ₂ ¹⁹	4- 251	5, 3, 2← 5, 2, 4	Ground		11/2		11/2	32 639.6	.05
Br ⁸¹ C ¹² N ¹⁴	4- 142	4← 3	Ground	5/2		5/2		32 643.13	
C ¹² Cl ₂ ³⁵ Cl ₂ ³⁷ C ¹² N ¹⁴	4- 583	10, , ← 9, ,	Ground					32 650.0	20.
C ¹² D ₂ Cl ₂ ³⁵	4- 346	2, 1, 2← 1, 0, 1	Ground					32 656.	2.
C ¹² H ₂ Cl ₂ ³⁵ F ¹⁹	4- 331	6, 0, 6← 5, 1, 5	Ground					32 659.51	1.0
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					32 660.	2.
C ¹² H ₂ Cl ₂ ³⁵ F ¹⁹	4- 331	6, 0, 6← 5, 1, 5	Ground					32 660.83	.1
C ¹² H ₂ Cl ₂ ³⁵ F ¹⁹	4- 331	6, 0, 6← 5, 1, 5	Ground					32 662.11	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Excited		11/2		9/2	32 664.9	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	21. 6,15←21. 5,17	Ground					32 669.0	.3
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Ground	7/2		7/2		32 670.5	
C ¹² H ₃ Ge ⁷⁰ HD ₂	3- 301	2, 1, 2← 1, 1, 1	Ground					32 674.06	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 675.	5.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Excited	9/2		7/2		32 676.7	
C ¹² H ₃ Ge ⁷⁴ HD ₂	3- 303	2, 0, 2← 1, 0, 1	Ground					32 680.50	.10
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Excited	7/2		5/2		32 682.2	
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	2, 1, 1← 2, 0, 2	Ground					32 684.	1.0
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Ground	11/2		9/2		32 691.7	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1.	Ground					32 692.	2.
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						32 695.	10.
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Ground	5/2		3/2		32 695.9	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Ground					32 697.20	
s-(C ¹² H ₂ D)(C ¹² H ₃)O ¹⁶	3- 596	3, 1, 2← 3, 0, 3	Ground					32 699.5	.5
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Ground	9/2		7/2		32 702.2	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 6←12, 6	Ground	25/2		23/2		32 707.68	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						32 708.	3.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	11, 4, ←12, 3.	Ground					32 708.	
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Ground	7/2		5/2		32 708.0	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 709.0	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	4, 0, 4← 3, 1, 3	Ground					32 709.25	.2
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 5←12, 5	Ground	27/2		25/2		32 713.35	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 5←12, 5	Ground	25/2		23/2		32 714.74	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 6←12, 6	Ground	29/2		27/2		32 717.22	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	13, 2,11←13, 2,12	Ground					32 720.26	.1
Br ⁸¹ C ¹² N ¹⁴	4- 142	4← 3	Ground	7/2		7/2		32 720.28	
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	8, ← 7,	Ground					32 720.8	.3
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 4←12, 4	Ground	25/2		23/2		32 720.85	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 4←12, 4	Ground	27/2		25/2		32 721.36	
Li ⁷ Br ⁸¹	1-	1← 0	Excited	1/2		3/2		32 722.60	0.10
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 9←12, 9	Ground	23/2		21/2		32 723.61	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	3, 1, 3← 2, 2, 0	Ground					32 723.83	.10
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 8←12, 8	Ground	23/2		21/2		32 724.73	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 5←12, 5	Ground	29/2		27/2		32 724.73	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 7←12, 7	Ground	23/2		21/2		32 725.28	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 3←12, 3	Ground	25/2		23/2		32 725.28	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 6←12, 6	Ground	23/2		21/2		32 726.06	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	13, 2,11←13, 2,12	Ground					32 726.13	.5
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 5←12, 5	Ground	23/2		21/2		32 727.10	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 3←12, 3	Ground	21/2		19/2		32 727.32	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 3←12, 3	Ground	27/2		25/2		32 727.74	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 4←12, 4	Ground	25/2		23/2		32 728.14	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 3←12, 3	Ground	23/2		21/2		32 728.68	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 2←12, 2	Ground	25/2		23/2		32 728.68	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 2←12, 2	Ground	23/2		21/2		32 729.00	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 1←12, 1	Ground	23/2	21/2			32 729.00	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 0←12, 0	Ground	23/2	21/2			32 729.00	
Li ⁷ Br ⁸¹	1-	1← 0	Excited	5/2	3/2			32 729.14	0.10
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 4←12, 4	Ground	29/2	27/2			32 729.7	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 1←12, 1	Ground	25/2	23/2			32 730.52	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 0←12, 0	Ground	25/2	23/2			32 731.19	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 0←12, 0	Ground	21/2	19/2			32 731.52	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 2←12, 2	Ground	27/2	25/2			32 731.83	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 1←12, 1	Ground	21/2	19/2			32 732.18	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 3←12, 3	Ground	29/2	27/2			32 733.05	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 2←12, 2	Ground	21/2	19/2			32 734.26	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 1←12, 1	Ground	27/2	25/2			32 734.45	
a-C ¹² H ₂ DC ¹² H:C ¹² H ₂	3- 742	2, 0, 2← 1, 0, 1	Ground					32 735.34	.05
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 0←12, 0	Ground	27/2	25/2			32 735.35	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 2←12, 2	Ground	29/2	27/2			32 736.05	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 0←12, 0	Ground	31/2	29/2			32 736.69	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 1←12, 1	Ground	31/2	29/2			32 737.22	
Li ⁷ Br ⁸¹	1-	1← 0	Excited	3/2	3/2			32 737.53	0.10
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 1←12, 1	Ground	29/2	27/2			32 737.72	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 0←12, 0	Ground	29/2	27/2			32 738.45	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 2←12, 2	Ground	31/2	29/2			32 738.45	
C ¹² HD ₂ Br ⁷⁹	4- 407	2, 1, 2← 1, 1, 1	Ground	7/2	5/2			32 739.4	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 3←12, 3	Ground	31/2	29/2			32 740.77	
O ^b O ^b O ^b	4-1847	Not Reported						32 741.	
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	5, 0, 5← 4, 1, 4	Ground					32 743.	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 4←12, 4	Ground	31/2	29/2			32 743.89	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 4←12, 4	Ground	21/2	19/2			32 743.89	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						32 745.	10.
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 5←12, 5	Ground	31/2	29/2			32 747.90	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					32 748.4	.2
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 5←12, 5	Ground	21/2	19/2			32 748.69	
H ₃ C ¹² C ¹² :C ¹² I ¹²⁷	4-1011	13, 6←12, 6	Ground	31/2	29/2			32 752.83	
C ¹² HCl ₂ ³⁵ Cl ³⁷	4- 262	5, 5, 1← 4, 4, 1	Ground					32 756.4	.4
C ¹² *H ₂ ^b S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						32 760.0	20.
C ¹² H ₂ Cl ₂ ³⁵	4- 341	9, 0, 9← 8, 1, 8	Ground					32 769.	5.
Br ⁸¹ C ¹² N ¹⁴	4- 142	4← 3	Ground	11/2	9/2			32 770.13	
Br ⁸¹ C ¹² N ¹⁴	4- 142	4← 3	Ground	9/2	7/2			32 770.13	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	5, 0, 5← 4, 0, 4	Ground					32 773.38	.2
C ¹² H ₃ Ge ⁷² HD ₂	3- 302	2, 0, 2← 1, 0, 1	Ground					32 774.60	.10
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						32 775.	10.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 2, 9←11, 1,10	Ground					32 777.28	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 2, 9←11, 1,10	Ground					32 782.77	.1
C ¹² H ₂ :C ¹² HBr ⁷⁹	4- 727	4, 1, 3← 3, 1, 2	Ground		9/2	9/2		32 785.9	
Br ⁸¹ C ¹² N ¹⁴	4- 142	4← 3	Ground	7/2	5/2			32 786.65	
Br ⁸¹ C ¹² N ¹⁴	4- 142	4← 3	Ground	5/2	3/2			32 786.65	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						32 790.	
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	2, 0, 2← 1, 0, 1	Ground					32 799.89	.4
O ^b O ^b O ^b	4-1847	Not Reported						32 800.	
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	2, 0, 2← 1, 0, 1	Ground					32 801.27	.2
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -E	3- 198	3, 2, 1← 2, 2, 0	Ground					32 803.71	
C ¹² H ₃ Si ²⁸ DF ₂ ¹⁹ -A	3- 197	3, 2, 1← 2, 2, 0	Ground					32 803.71	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	4← 3	Ground	5/2		5/2		32 804.56	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 3, 5← 8, 2, 6	Ground		17/2		17/2	32 804.90	.15
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 3, 5← 8, 2, 6	Ground		15/2		15/2	32 809.49	.15
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 1, 2← 1, 1, 1	Ground		2		1	32 811.64	.1
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 1, 2← 1, 1, 1	Ground		3		2	32 812.95	.1
C ¹² H ₃ C ¹² D:C ¹² H ₂	3- 747	2, 1, 2← 1, 1, 1	Ground					32 813.39	.05
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 1, 2← 1, 1, 1	Ground		1		0	32 814.30	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 818.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 819.24	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 820.71	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 0, ← 1, 0,	Ground					32 826.	2.
C ¹² D ₃ C ¹³ O ¹⁶ C ¹² N ¹⁴	3- 676	5, 2, 4← 4, 2, 3	Ground					32 826.45	.2
s-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 247	3, 1, 3← 2, 1, 2	Ground					32 827.38	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					32 827.63	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 827.91	
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 3, 5← 8, 2, 6	Ground		19/2		19/2	32 830.87	.15
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	15, ←14,	Excited					32 834.2	.4
C ¹² H ₃ C ¹² O ¹⁶ Br ⁸¹	3- 352	8, 3, 5← 8, 2, 6	Ground		13/2		13/2	32 835.67	.15
O ^b O ^b O ^b	4-1847	Not Reported						32 841.	
C ¹² H ₃ C ¹² H:C ¹³ H ₂	3- 749	2, 1, 2← 1, 1, 1	Ground					32 841.16	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 844.33	
Si ²⁸ HCl ₃ ³⁷	4-1504	7, ← 6,	Ground					32 845.02	.5
C ¹³ H ₃ C ¹² H:C ¹² H ₂	3- 748	2, 1, 2← 1, 1, 1	Ground					32 847.20	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					32 847.29	.1
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	15, ←14,	Excited					32 847.4	.4
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					32 848.94	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						32 850.	10.
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						32 850.0	20.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					32 851.00	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	15, ←14,	Excited					32 854.4	.4
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	2, 0, 2← 1, 0, 1	Ground					32 854.7	
F ₂ ¹⁹ N ¹⁴ N ¹⁴ F ₂ ¹⁹	3- 21	4, 2, 3← 3, 1, 3	Ground					32 856.	1.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					32 858.99	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 0, ← 1, 0,	Ground					32 859.5	.2
C ¹² H ₃ P ³¹ H ₂	3- 271	9, 1, 8← 8, 2, 6	Ground					32 864.5	.1
C ¹² D ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 675	5, 2, 4← 4, 2, 3	Ground					32 867.29	.2
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					32 872.9	.2
C ¹² H ₃ Ge ⁷⁰ HD ₂	3- 301	2, 0, 2← 1, 0, 1	Ground					32 873.10	.10
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	15, ←14,	Excited					32 874.3	.4

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ± MHz
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 874.34	
C ¹² H ₃ Ge ⁷⁴ HD ₂	3- 303	2, 1, 1← 1, 1, 0	Ground					32 879.44	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 880.05	
S ³⁴ P ³¹ Cl ₃ ³⁵	4-1535	12, ←11,	Ground					32 882.4	1.0
C ¹³ H ₃ O ¹⁶ H	3- 213	22, 2, ←22, 1,	Ground					32 883.47	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 2, 9←11, 1,10	Ground					32 883.48	.1
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						32 885.	10.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 886.	5.
(C ¹³ H ₃)(C ¹² H ₃)O ¹⁶	3- 594	3, 1, 2← 3, 0, 3	Ground					32 887.4	.5
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	15, ←14,	Ground					32 892.9	.3
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					32 897.0	1.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					32 898.5	1.
Br ⁸¹ C ¹² N ¹⁴	4- 142	4← 3	Ground	9/2		9/2		32 913.24	
HDO ₂ ¹⁶	3- 43	12, , ←12,						32 915.	3.
Ge ⁷⁴ HCl ₃ ³⁷	4-1496	8, ← 7,	Ground					32 915.41	.07
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 916.8	
HDO ₂ ¹⁶	3- 43	12, , ←12,						32 917.	3.
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	15, ←14,	Excited					32 917.2	.4
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	12, 3, 9←12, 2,10	Ground					32 918.68	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					32 921.	2.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 922.31	
C ¹² HD ₂ Br ⁸¹	4- 408	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		32 925.1	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	12, 3, 9←12, 2,10	Ground					32 927.01	.2
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 3, 1← 3, 3, 0	Ground					32 932.75	.1
C ¹³ H ₃ C ¹² H ₂ C ¹² H ₃	3- 782	6, 1, 5← 6, 0, 6	Ground					32 933.58	.06
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	3, 2, 1← 3, 1, 2	Ground					32 935.18	.10
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						32 940.	10.
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	15, ←14,	Excited					32 940.2	.4
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					32 945.	20.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					32 948.69	.1
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	15, ←14,	Excited					32 948.9	.4
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 3, 1, 2	Ground					32 950.24	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					32 953.30	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 3, 1, 2	Ground					32 956.15	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	4← 3	Ground	11/2		9/2		32 956.68	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	4← 3	Ground	9/2		7/2		32 956.68	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 0, ← 1, 0,	Ground					32 959.2	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 960.	5.
C ¹² H ₃ Ge ⁷⁴ HD ₂	3- 303	2, 1, 1← 1, 1, 0	Ground					32 963.60	.10
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 2, 3← 4, 0, 4	Ground					32 964.20	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					32 965.	20.
Ge ⁷² HCl ₃ ³⁷	4-1495	8, ← 7,	Ground					32 967.08	.07
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 0, 2← 1, 0, 1	Ground		1		0	32 967.44	.1
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 0, 2← 1, 0, 1	Ground		2		2	32 967.44	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						32 968.3	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F' ₁	F'	F ₁	F		
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 0, 2← 1, 0, 1	Ground		2		1	32 968.70	.1
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 0, 2← 1, 0, 1	Ground		3		2	32 968.70	.1
S ³² O ¹⁸ F ₂ ¹⁹	4-1622	2, 2, 0← 1, 1, 0	Ground					32 969.48	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					32 970.	20.
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 0, 2← 1, 0, 1	Ground		1		1	32 970.70	.1
C ¹² H ₃ N ¹⁴ O ¹⁶	3- 171	Not Reported	Ground					32 970.81	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	8, 7, 2← 8, 5, 3	Ground					32 973.15	.1
C ¹³ DCI ₃ ³⁵	4- 265	5, ← 4,	Ground					32 973.9	.4
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					32 974.99	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						32 975.	3.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 975.	5.
C ¹² H ₃ Ge ⁷² HD ₂	3- 302	2, 1, 1← 1, 1, 0	Ground					32 975.24	.10
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					32 975.4	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	4← 3	Ground	7/2		5/2		32 976.40	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	4← 3	Ground	5/2		3/2		32 976.40	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Ground					32 978.5	.5
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	12, 3, 9←12, 2,10	Ground					32 978.82	.2
C ¹³ H ₃ Ge ⁷⁶ H ₃	3- 289	2, 0← 1, 0	Ground					32 984.82	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					32 985.	2.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					32 985.3	
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	12, 3, 9←12, 2,10	Ground					32 987.34	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						32 992.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					32 994.15	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					32 995.86	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						32 997.06	.1
C ¹³ H ₃ O ¹⁶ H	3- 213	19, 2, ←19, 1,	Ground					32 998.94	.1
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					32 999.3	
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	10, , ← 9, ,	Ground					32 999.9	1.0
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 002.16	.1
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					33 006.1	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	2, 2, 1← 1, 1, 0	Ground					33 007.94	.03
O ^b O ^b O ^b	4-1847	Not Reported						33 009.	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 8← 8, 8	Ground					33 010.35	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 7← 8, 7	Ground					33 014.30	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 6← 8, 6	Ground					33 017.74	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 2, 5← 6, 3, 4	Ground					33 018.10	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	7, 2, 5← 6, 3, 4	Ground					33 018.62	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					33 020.	20.
C ¹² HCl ₃ ³⁵	4- 261	5, ← 4,	Ground					33 020.0	.4
C ¹³ H ₃ Ge ⁷⁴ H ₃	3- 288	2, 0← 1, 0	Ground					33 020.2	.10
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 5← 8, 5	Ground					33 020.60	.1
C ¹² H ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 491	5, 2, 3← 5, 1, 4	Ground					33 021.39	
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					33 022.6	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 4← 8, 4	Ground					33 022.94	.1
HDS ⁸²	4-1758	5, 3, 3← 5, 3, 2	Ground					33 023.0	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹³ H ₃ Ge ⁷⁴ H ₃	3- 288	2, 0← 1, 0	Ground					33 023.0	.10
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 3← 8, 3	Ground					33 024.77	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 2← 8, 2	Ground					33 026.08	.1
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					33 026.2	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 1← 8, 1	Ground					33 026.86	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 0← 8, 0	Ground					33 027.09	.1
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4 854	Not Reported						33 027.5	.2
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	7, 2, 5← 8, 1, 8	Ground	8		9		33 029.62	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	7, 2, 5← 8, 1, 8	Ground	6		7		33 029.62	.10
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					33 030.	20.
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	7, 2, 5← 8, 1, 8	Ground	7		8		33 031.20	.10
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					33 032.3	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground					33 033.0	.05
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 2, 0← 1, 1, 1	Ground					33 046.62	.04
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 2, 0← 1, 1, 1	Ground					33 047.70	.04
O ^b O ^b O ^b	4-1847	Not Reported						33 050.	
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					33 050.53	
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 2, 0← 1, 1, 1	Ground					33 051.65	.04
C ^b H ₂ Cl ^b F ^b	4 333	Not Reported						33 051.68	.1
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					33 052.04	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground					33 054.2	
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	2, 2, 0← 1, 1, 1	Ground					33 056.22	.04
C ¹² HD ₂ Br ⁷⁹	4 407	2, 1, 1← 1, 1, 0	Ground	7/2		5/2		33 057.1	
Li ⁷ Br ⁸¹	1-	1← 0	Ground	1/2		3/2		33 057.54	0.25
C ^b H ₂ Cl ^b F ^b	4 333	Not Reported						33 057.8	1.
C ¹² H ₃ Ge ⁷² HD ₂	3- 302	2, 1, 1← 1, 1, 0	Ground					33 059.35	.10
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 1, 3← 3, 1, 2	Ground					33 059.64	.03
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 2← 3, 0, 3	Excited					33 060.	20.
C ¹² H ₃ C ¹² H:C ¹² :C ¹² H ₂	3- 931	4, 1, 3← 3, 1, 2	Ground					33 060.34	.03
HC ¹³ :C ¹² C ¹² DO ¹⁶	4 922	Not Reported						33 062.	5.
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					33 063.5	
Li ⁷ Br ⁸¹	1-	1← 0	Ground	5/2		3/2		33 063.96	0.10
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground					33 065.4	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4 863	Not Reported						33 070.	10.
Li ⁷ Br ⁸¹	1-	1← 0	Ground	3/2		3/2		33 071.53	0.10
HDS ⁸⁰	4-1757	5, 3, 3← 5, 3, 2	Ground					33 075.4	
C ¹² H ₃ Ge ⁷⁰ HD ₂	3- 301	2, 1, 1← 1, 1, 0	Ground					33 075.77	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4 922	Not Reported						33 076.	5.
C ¹² H ₃ S ³² H	3- 221	10, 2, 8←11, 1,11	Ground					33 077.9	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground	4		4		33 077.98	.05
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 078.20	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground	4		3		33 078.78	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground	5		4		33 079.36	.05
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited					33 079.78	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0← 2, 1	Ground	3		2		33 079.80	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	1			1	33 080.14	.05
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 1 ← 8, 1	Excited					33 080.20	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	3			3	33 080.78	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	3			2	33 081.36	.05
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 8 ← 8, 8	Excited					33 083.30	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	4			4	33 083.82	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	4			3	33 084.28	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	5			4	33 084.90	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	3			2	33 085.52	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	1			1	33 085.78	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	3			3	33 086.44	.05
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	3, 0 ← 2, 1	Ground	3			2	33 087.04	.05
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 5 ← 8, 5	Excited					33 087.11	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					33 089.91	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 4 ← 8, 4	Excited					33 089.98	.1
C ¹² ₃ H ₂ S ³⁴ C ¹² ₃ H ₂	4- 852	7, 2, 6 ← 7, 2, 5	Ground					33 091.8	.2
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 5 ← 8, 5	Excited					33 092.23	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 3 ← 8, 3	Excited					33 092.23	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 2 ← 8, 2	Excited					33 094.08	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 4 ← 8, 4	Excited					33 094.08	.1
C ¹² D ₃ Si ²⁸ F ¹⁹ ₃	3- 132	5, ← 4,	Excited					33 095.30	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 1 ← 8, 1	Excited					33 095.39	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 3 ← 8, 3	Excited					33 095.39	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 095.66	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 0 ← 8, 0	Excited					33 096.06	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 2 ← 8, 2	Excited					33 096.27	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 096.66	
C ¹³ H ₃ Ge ⁷⁴ H ₃	3- 288	2, 0 ← 1, 0	Ground					33 100.38	.10
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	11, 2, 9 ← 11, 2, 10	Ground					33 106.55	.10
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	11, 2, 9 ← 11, 2, 10	Ground					33 109.80	.10
C ¹² D ₃ Si ²⁸ F ¹⁹ ₃	3- 132	5, ← 4,	Excited					33 110.97	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	9, 1 ← 8, 1	Excited					33 112.67	.1
C ¹² H ₃ C ¹² HDC ¹² H ₃	3- 784	1, 1, 1 ← 0, 0, 0	Ground					33 112.93	.12
C ¹² H ₃ C ¹² ₃ HO ¹⁶ C ¹² ₃ H ₂	3- 761	3, 2, 1 ← 3, 1, 2	Ground					33 120.72	.1
C ¹² H ₂ Cl ³⁷ ₂	4- 343	8, 1, 7 ← 8, 0, 8	Ground					33 121.	5.
Li ⁷ Br ⁷⁹	1-	1 ← 0	Ground	1/2			3/2	33 122.44	0.30
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 1, 1 ← 1, 1, 0	Ground	2			1	33 122.87	.1
C ¹² ₃ H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ ₃	4-1094	5, 2, 3 ← 5, 2, 4	Ground					33 123.27	.1
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 1, 1 ← 1, 1, 0	Ground	3			2	33 124.23	.1
C ¹² H ₃ C ¹² ₃ HO ¹⁶ C ¹² ₃ H ₂	3- 761	3, 2, 1 ← 3, 1, 2	Ground					33 124.24	.1
C ¹² HD ₂ C ¹² N ¹⁴	4- 813	2, 1, 1 ← 1, 1, 0	Ground	1			0	33 125.55	.1
C ¹² ₃ H ₂ C ¹² D:C ¹² ₃ H	4-1032	1, 0, 1 ← 0, 0, 0	Ground					33 126.1	
HDS ⁷⁸	4-1756	5, 3, 3 ← 5, 3, 2	Ground					33 129.7	
Li ⁷ Br ⁷⁹	1-	1 ← 0	Ground	5/2			3/2	33 130.30	0.10
C ¹² D ₃ Si ²⁸ F ¹⁹ ₃	3- 132	5, ← 4,	Excited					33 132.71	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹³ H ₃ C ¹² O ¹⁶ F ¹⁹	3- 393	2, 1, 1← 1, 1, 0	Ground		33 135.80	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		33 136.5	
Li ⁷ Br ⁷⁹	1-	1← 0	Ground	3/2 3/2	33 139.50	0.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		33 141.61	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported			33 144.27	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			33 145.	5.
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Ground		33 145.02	.1
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited		33 148.51	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	17, 4, ←16, 5,	Ground		33 152.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		33 152.3	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported			33 153.04	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 1← 3, 1, 2	Ground		33 155.45	.1
N ¹⁴ H ₃	4-1771	13,13←13,13	Ground		33 156.95	.10
N ¹⁴ O ₂ Cl ³⁷	4-1462	4, 0, 4← 3, 0, 3	Ground	5/2 3/2	33 156.97	
HDS _e ⁷⁷	4-1755	5, 3, 3← 5, 3, 2	Ground		33 157.4	
N ¹⁴ O ₂ Cl ³⁷	4-1462	4, 0, 4← 3, 0, 3	Ground	7/2 5/2	33 157.49	
C ¹² H ₃ P ³¹ H ₂	3- 271	9, 1, 8← 8, 2, 6	Ground		33 158.1	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported			33 158.40	.1
N ¹⁴ O ₂ Cl ³⁷	4-1462	4, 0, 4← 3, 0, 3	Ground	11/2 9/2	33 159.29	
N ¹⁴ O ₂ Cl ³⁷	4-1462	4, 0, 4← 3, 0, 3	Ground	9/2 7/2	33 159.75	
C ¹² H ₃ C ¹² :C ¹³ H	4-1044	2, 1← 1, 1	Ground		33 159.90	.10
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported			33 160.4	.5
C ¹² H ₃ C ¹² :C ¹³ H	4-1044	2, 0← 1, 0	Ground		33 160.94	.10
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	5, 0, 5← 4, 0, 4	Ground		33 161.23	.2
C ^b H ₂ ClF ^b	4- 333	Not Reported			33 162.40	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	9, 4, 6← 9, 3, 6	Ground	15/2 15/2	33 167.4	.05
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	9, 4, 6← 9, 3, 6	Ground	21/2 21/2	33 168.1	.05
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	12, 4, 8←12, 3, 9	Ground		33 169.95	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			33 170.	5.
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	9, 4, 6← 9, 3, 6	Ground	17/2 17/2	33 171.4	.05
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	9, 4, 6← 9, 3, 6	Ground	19/2 19/2	33 172.1	.05
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	7, 1, 6← 7, 1, 7	Ground		33 175.33	.10
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	7, 1, 6← 7, 1, 7	Ground		33 178.93	.10
C ¹² D ₃ Si ²⁸ F ₃ ¹⁹	3- 132	5, ← 4,	Excited		33 181.81	
C ¹³ H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 672	11, 4, 7←11, 3, 8	Ground		33 182.59	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			33 183.	5.
t-C ¹² H ₃ C ¹² H:C ¹² HD	3- 746	2, 1, 1← 1, 1, 0	Ground		33 186.35	.05
HDS _e ⁷⁶	4-1759	5, 3, 3← 5, 3, 2	Ground		33 188.2	
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	14, 2,12←15, 1,15	Ground		33 191.	
C ¹³ H ₃ O ¹⁶ H	3- 213	21, 2, ←21, 1,	Ground		33 192.97	.1
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	8, 2, 6← 8, 1, 7	Ground		33 195.45	.10
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	3, 1, 2← 3, 0, 3	Ground		33 196.80	.05
C ¹² H ₃ P ³¹ H ₂	3- 271	4, 0, 4← 3, 1, 2	Ground		33 202.0	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			33 205.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 5← 7, 1, 6	Ground					33 210.66	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 5← 7, 1, 6	Ground					33 211.20	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 5← 7, 1, 6	Ground					33 211.73	.05
C ¹² D ₃ Si ^b HD ₂	3- 331	2, 1, 2← 1, 1, 1						33 213.00	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					33 216.01	.1
C ¹³ H ₃ O ¹⁶ H	3- 213	20, 2, ←20, 1,	Ground					33 220.05	.1
C ¹³ H ₃ Ge ⁷² H ₃	3- 287	2, 0← 1, 0	Ground					33 221.62	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 222.20	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						33 224.05	.1
C ¹² D ₃ Si ³⁰ H ₂ F ¹⁹	3- 246	3, 1, 2← 2, 1, 1	Ground					33 224.40	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 233.51	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 239.	5.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	3, 1, 3← 2, 1, 2	Ground					33 242.36	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 3, 6← 8, 4, 5	Ground					33 247.86	.1
O ^b O ^b O ^b	4-1847	Not Reported						33 248.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 3, 6← 8, 4, 5	Ground					33 248.84	.1
O ¹⁶ F ₂ ¹⁹	4-1611	4, 2, 3← 5, 1, 4	Ground					33 251.80	.10
C ¹³ H ₃ C ¹² :C ¹² H	4-1043	2, 1← 1, 1	Ground					33 252.22	.10
C ¹³ H ₃ C ¹² :C ¹² H	4-1043	2, 0← 1, 0	Ground					33 252.88	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 254.	5.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	3, 0, 3← 2, 0, 2	Ground					33 255.43	.1
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	2, 1, 1← 1, 1, 0	Ground					33 262.94	.1
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	2, 3, ← 2, 1,	Ground					33 264.	1.0
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	2, 1, 1← 1, 1, 0	Ground					33 264.34	.1
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	4, 1, 3← 4, 1, 4	Excited					33 267.02	.1
C ¹² D ₃ Si ²⁸ H ₂ F ¹⁹	3- 244	3, 1, 2← 2, 1, 1	Ground					33 274.15	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 277.30	
C ¹² D ₃ Si ^b HD ₂	3- 331	2, 1, 2← 1, 1, 1						33 283.75	.2
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	3, 2, 2← 3, 1, 3	Ground					33 285.	
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	3, 1, 2← 3, 0, 3	Ground					33 290.16	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 292.34	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 301.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 302.0	
s-C ¹² HD ₂ C ¹² HO ¹⁶	3- 475	2, 1, 2← 1, 1, 1	Ground					33 302.30	.3
c-HF ¹⁹ C ¹² :C ¹³ HF ¹⁹	4- 692	6, 1, 5← 6, 0, 6	Ground					33 305.61	.05
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						33 312.64	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	3, 2, 1← 3, 1, 2	Excited					33 320.42	.10
C ¹² D ₃ Si ^b HD ₂	3- 331	2, 0, 2← 1, 0, 1						33 323.	
C ¹² H ₃ Ge ⁷⁴ H ₂ D	3- 299	2, 1, 2← 1, 1, 1	Ground					33 328.63	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 336.80	.1
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						33 340.	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 341.66	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 342.	5.
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	5, 0, 5← 4, 0, 4	Ground					33 344.70	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 345.34	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	10, ← 9,	Ground					33 346.5	1.0
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 2← 1, 0, 1	Ground					33 346.88	.1
C ¹³ H ₃ Ge ⁷⁰ H ₃	3- 286	2, 0← 1, 0	Ground					33 349.30	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 350.	5.
C ¹² *H ₂ C ¹² H:C ¹² *H	4-1031	9, 5, 4← 9, 5, 5	Ground					33 353.4	
C ¹² D ₃ N ¹⁴ D ₂	3- 262	3, 1, 3← 3, 0, 3	Ground					33 360.49	
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	3, 1, 2← 3, 0, 3	Ground					33 363.2	.2
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	10, ← 9,	Excited					33 363.7	1.0
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	5, 3, 3← 5, 1, 4	Excited					33 367.40	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 376.80	
O ¹⁶ *C ¹² H ₂ C ¹² H ₂ C ¹² *O ¹⁶	4-1071	4, 1, 4← 3, 1, 3	Ground					33 384.4	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 386.4	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 388.2	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	8, 1, 7← 8, 0, 8	Ground					33 393.	2.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 396.58	
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	4, 2, 3← 4, 0, 4	Excited					33 398.61	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						33 404.40	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						33 406.00	.1
C ¹² D ₃ Si ^b HD ₂	3- 331	2, 0, 2← 1, 0, 1						33 409.81	.2
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						33 410.	10.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					33 414.1	.1
C ¹² H ₃ C ¹² H ₂ C ¹² H ₃	3- 781	6, 1, 5← 6, 0, 6	Ground					33 414.72	.03
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 414.78	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 2← 1, 0, 1	Ground					33 414.80	.1
C ¹² H ₃ C ¹² O ¹⁶ C ¹³ N ¹⁴	3- 673	12, 4, 8←12, 3, 9	Ground					33 415.93	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 416.85	
C ¹² *H ₂ N ¹⁴ DC ¹² *H ₂	4- 862	1, 0, 1← 0, 0, 0	Ground					33 420.	20.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 422.3	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 430.28	.1
C ¹² H ₃ Ge ⁷² H ₂ D	3- 298	2, 1, 2← 1, 1, 1	Ground					33 432.60	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	46,23, ←45,24,	Ground					33 432.64	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	46,23, ←45,24,	Ground					33 433.28	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 435.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	22,10, ←21,11,	Ground					33 444.73	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	22,10, ←21,11,	Ground					33 445.03	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	22,10, ←21,11,	Ground					33 445.65	.1
C ¹² H ₃ C ¹³ H ₂ C ¹² H ₃	3- 783	6, 1, 5← 6, 0, 6	Ground					33 446.47	.06
C ¹² D ₃ N ¹⁴ D ₂	3- 262	3, 1, 3← 3, 0, 3	Ground					33 454.41	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 461.	5.
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	6, 4, 3← 6, 2, 4	Excited					33 462.65	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						33 470.	10.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 470.86	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					33 476.5	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 477.35	
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	6, 1, 5← 6, 0, 6	Ground					33 478.20	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 2← 1, 0, 1	Ground					33 480.62	.1
C ¹² D ₃ Si ^b HD ₂	3- 331	2, 0, 2← 1, 0, 1						33 483.80	.2
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	5, 0, 5← 4, 1, 4	Ground					33 484.7	.5
c-C ¹² H ₃ C ¹² H:C ¹² HD	3- 745	2, 0, 2← 1, 0, 1	Ground					33 499.06	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 506.8	
C ¹² D ₃ N ¹⁴ D ₂	3- 262	3, 1, 3← 3, 0, 3	Ground					33 512.83	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 513.	5.
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	4, 1, 3← 4, 1, 4	Ground					33 522.45	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 529.	5.
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	8, 2, 7← 9, 1, 8	Ground					33 537.	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	2, 1, 2← 1, 0, 1	Ground					33 539.31	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 540.	5.
C ¹² *D ₂ S ³² C ¹² *D ₂	4- 853	5, 1, 5← 5, 1, 4	Ground					33 541.5	.2
C ¹² H ₃ Ge ⁷⁰ H ₂ D	3- 297	2, 1, 2← 1, 1, 1	Ground					33 541.74	.10
C ¹² H ₃ C ¹² O ¹⁸ F ¹⁹	3- 394	2, 1, 1← 1, 1, 1	Ground					33 547.57	.2
C ¹² H ₃ Ge ⁷² H ₂ D	3- 298	2, 1, 2← 1, 1, 1	Ground					33 560.98	.10
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	3, 1, 3← 2, 1, 2	Ground					33 562.20	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 563.3	
C ¹² D ₃ Si ^b HD ₂	3- 331	2, 0, 2← 1, 0, 1						33 565.07	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					33 566.20	.1
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					33 568.2	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	4, 1, 3← 4, 0, 4	Ground					33 568.38	.10
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	2, 1, 1← 1, 1, 0	Ground					33 577.06	.4
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						33 580.	10.
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	2, 1, 1← 1, 0, 1	Ground					33 587.42	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 588.	5.
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						33 590.	10.
S ³² O ¹⁸ F ₂ ¹⁹	4-1622	2, 2, 1← 1, 1, 1	Ground					33 590.51	.1
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	3, 1, 3← 2, 0, 2						33 596.36	.4
O ^b O ^b O ^b	4-1847	Not Reported						33 599.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 599.1	
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	5, 3, 3← 5, 1, 4	Ground					33 610.18	.1
C ¹² H ₃ Ge ⁷⁴ H ₂ D	3- 299	2, 0, 2← 1, 0, 1	Ground					33 610.80	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 612.42	.1
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	4, 2, 4← 4, 1, 4	Ground					33 619.5	.3
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 619.9	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 620.	5.
C ¹² D ₃ C ¹² O ¹⁶ O ¹⁶ H	3- 492	3, 1, 3← 2, 0, 2						33 621.42	.4
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	5, 0, 5← 4, 1, 4	Ground					33 625.6	.5
C ¹² H ₃ C ¹³ H:C ¹² H ₂	3- 744	2, 1, 2← 1, 1, 1	Ground					33 625.62	.03
C ¹² H ₃ C ¹³ H:C ¹² H ₂	3- 744	2, 1, 2← 1, 1, 1	Ground					33 626.01	.03
s-C ¹² H ₂ DC ¹² H:C ¹² H ₂	3- 743	2, 0, 2← 1, 0, 1	Ground					33 626.41	.05
O ^b O ^b O ^b	4-1847	Not Reported						33 631.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 631.5	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						33 633.04	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 635.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 636.8	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 639.5	
C ¹³ D ₃ N ¹⁴ C ¹²	4- 835	2, 0 ← 1, 0	Ground					33 640.6	.3
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					33 643.5	.2
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	4, 2, 3 ← 4, 0, 4	Ground					33 646.22	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 647.20	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 654.3	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 658.81	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -E	3- 702	4, 2, 2 ← 4, 1, 3						33 661.10	.2
S ³² P ³¹ Cl ₃ ³⁵	4-1531	12, ←11,	Ground					33 662.9	.5
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						33 664.2	.5
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ -A	3- 701	4, 2, 2 ← 4, 1, 3						33 666.44	.2
C ¹² H ₃ Ge ⁷⁰ H ₂ D	3- 297	2, 1, 2 ← 1, 1, 1	Ground					33 670.44	.10
C ¹² H ₂ Cl ₂ ³⁵	4- 341	8, 1, 7 ← 8, 0, 8	Ground					33 672.	2.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 673.74	.1
C ^b H ₂ C ^b F ^b	4- 333	Not Reported						33 677.98	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						33 680.	10.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	2, 1, 1 ← 1, 0, 1	Ground					33 685.69	.1
O ^b O ^b O ^b	4-1847	Not Reported						33 691.	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					33 691.63	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						33 692.1	.5
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					33 693.74	.1
Ge ⁷⁴ F ₃ ¹⁹ Cl ³⁷	4-1406	8, ← 7,	Ground					33 694.43	.30
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	6, 4, 3 ← 6, 2, 4	Ground					33 695.12	.1
a-C ¹² H ₂ DC ¹² H:C ¹² H ₂	3- 742	2, 1, 1 ← 1, 1, 0	Ground					33 695.17	.05
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	5, 0, 5 ← 4, 1, 4	Excited					33 700.7	.5
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	8, 1, 8 ← 7, 2, 5	Ground					33 703.27	.1
C ¹² H ₃ C ¹² H:C ¹² H ₂	3- 741	2, 1, 2 ← 1, 1, 1	Ground					33 707.81	.03
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	8, 1, 8 ← 7, 2, 5	Ground					33 708.06	.1
C ¹² H ₃ C ¹² H:C ¹² H ₂	3- 741	2, 1, 2 ← 1, 1, 1	Ground					33 708.26	.03
Ge ⁷² F ₃ ¹⁹ Cl ³⁷	4-1404	8, ← 7,	Ground					33 711.21	.30
C ¹² H ₃ Ge ⁷² H ₂ D	3- 298	2, 0, 2 ← 1, 0, 1	Ground					33 716.38	.10
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	2, 1, 1 ← 1, 1, 0	Ground					33 723.1	.3
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	4, 0, 4 ← 3, 1, 3	Ground					33 725.	1.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 726.11	.1
Ge ⁷⁰ F ₃ ¹⁹ Cl ³⁷	4-1402	8, ← 7,	Ground					33 728.15	.80
t-HDC ¹² :C ¹² DC ¹³ ³⁵	4- 761	3, 1, 2 ← 2, 1, 1	Ground					33 729.57	
t-HDC ¹² :C ¹² DC ¹³ ³⁵	4- 761	3, 1, 2 ← 2, 1, 1	Ground					33 733.08	
C ^b H ₂ C ^b F ^b	4- 333	Not Reported						33 733.21	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 737.34	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 738.45	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						33 740.	10.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 740.12	.1
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	2, 1, 2 ← 1, 1, 1	Ground					33 741.3	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ N ¹⁴ D ₂	3- 262	3, 1, 3← 3, 0, 3	Ground					33 751.65	
C ¹² D ₃ Si ^b HD ₂	3- 331	15, 1,14←15, 1,15						33 759.17	.4
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 760.50	.1
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	5, 0, 5← 4, 1, 4	Ground					33 765.25	.1
C ¹² H ₃ Ge ⁷⁴ H ₂ D	3- 299	2, 1, 1← 1, 1, 0	Ground					33 767.66	.10
C ¹² H ₃ Ge ⁷⁴ H ₂ D	3- 299	2, 1, 2← 1, 1, 1	Ground					33 767.80	.10
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						33 769.71	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 779.84	.1
O ^b O ^b O ^b	4-1847	Not Reported						33 781.	
C ¹² ₆ H ₂ N ¹⁴ HC ¹² ₈ H ₂	4- 861	4, 4, 1← 4, 3, 2	Ground					33 784.2	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						33 787.00	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 790.	5.
HDO ₂ ¹⁶	3- 43	11, , ←11, ,						33 790.	3.
HDO ₂ ¹⁶	3- 43	11, , ←11, ,						33 791.	3.
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	5, 5, 1← 5, 3, 2	Ground					33 792.5	.3
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 804.39	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 808.	5.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 822.	5.
C ¹² H ₃ Ge ⁷⁰ H ₂ D	3- 297	2, 0, 2← 1, 0, 1	Ground					33 827.32	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 838.93	
C ¹² D ₃ Si ^b HD ₂	3- 331	Not Reported						33 839.0	.4
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 848.	5.
C ¹² D ₃ Si ^b HD ₂	3- 331	2, 1, 1← 1, 1, 0						33 851.17	.2
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	3, 1, 3← 2, 1, 2	Ground					33 857.0	.3
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 858.74	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						33 860.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 862.2	
C ¹² DBr ₃ ⁸¹	4- 244	14, ←13,	Ground					33 866.2	.5
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	5, 0, 5← 4, 1, 4	Ground					33 871.6	.5
C ¹² H ₃ Ge ⁷² H ₂ D	3- 298	2, 1, 1← 1, 1, 0	Ground					33 874.76	.10
C ^b ₈ H ₂ N ^b H ^b C ^b ₈ H ₂	4- 863	Not Reported						33 880.	10.
C ¹² ₈ H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ ₈	4-1094	7, 5, 3← 7, 3, 4	Excited					33 884.65	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 890.15	.1
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 2, 2← 3, 2, 1	Ground					33 893.	5.
C ¹² H ₃ Ge ⁷⁴ H ₂ D	3- 299	2, 1, 1← 1, 1, 0	Ground					33 895.92	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 896.54	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 896.63	
c-HDC ¹² :C ¹² DF ₂ ¹⁹	4- 789	2, 1, 2← 1, 1, 1	Ground					33 898.3	.3
C ^b ₈ H ₂ N ^b H ^b C ^b ₈ H ₂	4- 863	Not Reported						33 900.	10.
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						33 900.	
c-C ¹² H ₃ C ¹² H:C ¹² HF ₂ ¹⁹ -E	3- 702	8, 2, 6← 8, 1, 7						33 900.78	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 904.84	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 908.06	
N ¹⁴ H ₂ D	4-1773	9, 3, 7← 9, 2, 7	Ground					33 909.34	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 910.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 0, 4← 3, 0, 3	Ground		9/2		9/2	33 911.19	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 917.5	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .A	3- 701	8, 2, 6← 8, 1, 7						33 917.68	.2
C ¹² H ₃ O ¹⁸ H	3- 217	2, 2, ← 2, 1,	Ground					33 918.97	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 924.	5.
C ¹² H ₃ O ¹⁸ H	3- 217	3, 2, ← 3, 1,	Ground					33 925.49	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 929.63	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 0, 4← 3, 0, 3	Ground		5/2		3/2	33 930.27	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 0, 4← 3, 0, 3	Ground		7/2		5/2	33 930.97	
O ^b O ^b O ^b	4-1847	Not Reported						33 931.	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 0, 4← 3, 0, 3	Ground		11/2		9/2	33 933.17	
C ¹² H ₃ C ¹² H:C ¹³ H ₂	3- 749	2, 0, 2← 1, 0, 1	Ground					33 933.42	.10
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 0, 4← 3, 0, 3	Ground		9/2		7/2	33 933.83	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 936.10	.1
C ¹³ H ₃ C ¹² H:C ¹² H ₂	3- 748	2, 0, 2← 1, 0, 1	Ground					33 937.14	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					33 938.69	
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						33 940.0	15.
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 0, 4← 3, 0, 3	Ground		7/2		7/2	33 941.4	
C ¹² *D ₂ S ³² C ¹² *D ₂	4- 853	7, 2, 6← 7, 2, 5	Ground					33 942.5	.2
C ¹² H ₃ O ¹⁸ H	3- 217	4, 2, ← 4, 1,	Ground					33 943.63	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 944.	5.
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .A	3- 191	3, 2, 1← 2, 2, 0	Ground					33 951.02	
C ¹² H ₃ Si ²⁸ HF ₂ ¹⁹ .E	3- 192	3, 2, 1← 2, 2, 0	Ground					33 951.02	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 0, 4← 3, 0, 3	Ground		5/2		5/2	33 953.0	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	2, 2, 0← 1, 1, 0	Ground					33 957.43	.1
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						33 960.0	15.
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 1, 1← 1, 1, 0	Ground					33 963.77	.10
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						33 965.	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						33 974.94	.1
C ¹² H ₃ O ¹⁸ H	3- 217	5, 2, ← 5, 1,	Ground					33 981.35	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 984.11	
C ¹² H ₃ Ge ⁷⁰ H ₂ D	3- 297	2, 1, 1← 1, 1, 0	Ground					33 987.35	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	2, 1, ← 1, 1,	Ground					33 988.5	.2
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						33 990.	10.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					33 990.5	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					33 995.68	
C ¹² H ₃ Si ²⁸ Cl ₃ ³⁷	3- 112	10, ← 9,	Excited					33 995.81	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 1← 2, 1, 1	Ground					33 997.63	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						33 998.	5.
Si ²⁸ HCl ₃ ³⁵ Cl ³⁷	4-1502	7, , ← 6, ,	Ground					34 000.	20.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					34 001.35	.1
C ¹² H ₃ Ge ⁷² H ₂ D	3- 298	2, 1, 1← 1, 1, 0	Ground					34 003.14	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					34 003.69	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 013.42	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 013.70	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
a-C ¹² H ₂ DC ¹² H ₂ C ¹² H ₃	3- 786	1, 1, 1← 0, 0, 0	Ground		34 014.10	.12
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported			34 017.44	.1
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	6, 4, 2← 6, 3, 3	Ground		34 017.5	.2
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	7, ← 6,	Excited		34 019.9	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 1← 2, 1, 1	Ground		34 022.78	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 1← 2, 1, 1	Ground		34 024.55	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			34 025.	5.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		34 032.79	
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	7, ← 6,	Ground		34 033.7	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground		34 040.42	
O ¹⁶ F ₂ ¹⁹	4-1611	6, 2, 4← 7, 1, 7	Ground		34 044.45	.10
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	7, ← 6,	Excited		34 048.2	
C ¹² H ₃ O ¹⁸ H	3- 217	6, 2, ← 6, 1,	Ground		34 048.42	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	7, 5, 2← 7, 4, 3	Ground		34 053.3	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 0← 2, 1, 1	Ground		34 055.65	.1
(C ¹² H ₃) ₂ C ¹³ H ₃ N ¹⁴	3- 852	2, 1, 1← 1, 0, 1	Ground		34 055.7	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 0← 2, 1, 1	Ground		34 058.49	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		34 070.35	.1
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	7, ← 6,	Excited		34 072.4	
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	7, 5, 3← 7, 3, 4	Ground		34 082.82	.1
C ¹² HBr ₃ ⁸¹	4- 242	14, ←13,	Ground		34 084.1	.5
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	5, ← 4,	Excited		34 088.6	.5
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	5, ← 4,	Excited		34 094.9	.5
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported			34 097.96	.1
O ₃ ¹⁸	4-1845	18, 2,16←17, 3,15	Ground		34 102.	
C ¹³ H ₃ (C ¹² H ₃) ₂ P ³¹	3- 862	3, 2, 1← 2, 1, 1	Ground		34 103.5	
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	5, ← 4,	Ground		34 109.8	.3
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 0← 2, 1, 1	Ground		34 111.51	.1
C ₇ ¹² H ₁₃ N ¹⁴	4-1311	7, ← 6,	Excited		34 113.0	
C ¹² H ₃ Ge ⁷⁰ H ₂ D	3- 297	2, 1, 1← 1, 1, 0	Ground		34 115.77	.10
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported			34 117.04	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported			34 120.	10.
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	5, ← 4,	Excited		34 133.4	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			34 135.	5.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported			34 136.22	.1
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	5, ← 4,	Excited		34 148.	
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	4, 4, 0← 4, 3, 1	Ground		34 148.3	.5
C ¹² H ₃ O ¹⁸ H	3- 217	7, 2, ← 7, 1,	Ground		34 155.63	.1
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	2, 2, 1← 2, 1, 2	Ground		34 157.1	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			34 158.	5.
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	10, 8, 2←10, 7, 3	Ground		34 165.1	
C ¹² H ₃ C ¹³ :C ¹² H	4-1042	2, 1← 1, 1	Ground		34 168.47	.14
C ¹² H ₃ C ¹³ :C ¹² H	4-1042	2, 0← 1, 0	Ground		34 169.13	.14
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	5, ← 4,	Excited		34 171.	
F ₂ ¹⁹ O ¹⁶ O ¹⁸	3- 12	5, 0, 5← 4, 1, 4	Ground		34 171.9	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F'	F ₁	F		
C ¹² *H ₂ S ³⁴ C ¹² *H ₂	4- 852	2, 1, 2← 1, 1, 1	Ground					34 174.7	1.5
D ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 683	3, 0, 3← 2, 0, 2	Ground					34 178.2	.3
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 181.9	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	2, 1← 1, 1	Ground					34 182.71	.10
C ¹² H ₃ C ¹² :C ¹² H	4-1041	2, 0← 1, 0	Ground					34 183.37	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					34 187.18	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 188.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 189.6	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 193.09	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						34 200.	10.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					34 200.10	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	2, 2, 1← 1, 1, 1	Ground					34 201.22	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 1, 8← 9, 0, 9	Ground					34 201.56	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					34 203.	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 3← 3, 2, 2	Excited					34 210.	
s-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 247	2, 0, 3← 2, 0, 2	Ground					34 215.20	.10
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	5, ← 4,	Excited					34 219.0	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 220.	5.
C ¹² H ₃ C ¹² D:C ¹² H ₂	3- 747	2, 0, 2← 1, 0, 1	Ground					34 223.64	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 236.	5.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					34 236.91	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 237.2	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						34 240.	10.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 241.32	.1
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						34 243.3	.5
C ¹² H ₃ C ¹² :C ¹² H	4-1041	2, 1← 1, 1	Excited					34 246.30	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 251.6	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 1, 8← 9, 0, 9	Ground					34 254.08	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 257.2	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					34 262.44	.1
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	6, 5← 5, 5	Ground					34 268.24	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	6, 4← 5, 4	Ground					34 268.83	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	6, 3← 5, 3	Ground					34 269.30	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	6, 1← 5, 1	Ground					34 269.81	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	6, 2← 5, 2	Ground					34 269.81	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	6, 0← 5, 0	Ground					34 269.81	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	2, 1← 1, 1	Excited					34 277.05	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	2, 0← 1, 0	Excited					34 278.98	
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						34 280.	10.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					34 280.0	
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	4, 1, 3← 4, 0, 4	Ground					34 282.8	.2
C ¹² H ₂ Cl ₂ ³⁷	4- 343	9, 1, 8← 9, 0, 9	Ground					34 286.	5.
O ¹⁶ F ₂ ¹⁹	4-1611	16, 2, 15← 15, 3, 12	Ground					34 291.10	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 298.00	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 305.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					34 306.81	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ P ³¹	3- 862	3, 1, 2← 2, 0, 2	Ground					34 308.4	
(C ¹² H ₃) ₃ C ¹² I ¹²⁷	3- 991	11, ←10,	Ground					34 310.	30.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					34 310.92	.1
C ¹² H ₃ C ¹² ; C ¹² H	4-1041	2, 1← 1, 1	Excited					34 313.21	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 313.21	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					34 314.3	
C ¹² H ₃ O ¹⁸ H	3- 217	8, 2, ← 8, 1,	Ground					34 314.64	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 317.	5.
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	8, ← 7,	Excited					34 317.44	.5
C ¹² H ₃ Si ²⁸ HDF ¹⁹	3- 252	3, 1, 3← 2, 1, 2	Ground					34 322.20	.10
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 0← 1, 1, 0	Ground		1/2		1/2	34 325.80	
C ¹² D ₃ N ¹⁴ C ¹²	4- 834	2, 1← 1, 1	Ground					34 326.93	.1
C ¹² D ₃ N ¹⁴ C ¹²	4- 834	2, 0← 1, 0	Ground					34 327.45	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 0← 1, 1, 0	Ground		7/2		5/2	34 330.43	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	13, 1,12←13, 1,13	Ground					34 333.14	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 0← 1, 1, 0	Ground		5/2		3/2	34 337.10	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 339.55	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 0← 1, 1, 0	Ground		5/2		5/2	34 342.73	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	8, ← 7,	Excited					34 343.20	.5
(C ¹² H ₃) ₂ C ¹³ H ₃ N ¹⁴	3- 852	2, 2, 0← 1, 1, 0	Ground					34 346.2	.2
D ₂ O ₂ ¹⁶	3- 42	Not Reported						34 348.	3.
C ¹³ H ₃ (C ¹² H ₃) ₂ P ³¹	3- 862	3, 2, 2← 2, 1, 2	Ground					34 349.3	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 350.	5.
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	8, ← 7,	Ground					34 366.12	.5
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2,15←15, 3,12	Ground		35/2		33/2	34 372.7	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 372.7	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 1, 5← 6, 1, 6						34 378.86	
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	2, 1, 1← 1, 1, 0	Ground					34 379.40	.2
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 379.87	.1
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						34 380.	10.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 384.88	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	35,17, ←34,18,	Ground					34 385.90	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	35,17, ←34,18,	Ground					34 386.62	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ P ³¹	3- 862	3, 3, 0← 2, 2, 0	Ground					34 390.5	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 390.8	
F ₂ ¹⁹ O ₂ ¹⁸	3- 13	5, 0, 5← 4, 1, 4	Ground					34 395.9	.5
H ₂ C ¹² *O ¹⁶ C ¹³ *H ₂	4- 842	2, 2, 1← 2, 1, 2	Ground					34 398.0	.4
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 398.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2,15←15, 3,12	Ground		33/2		31/2	34 398.6	
C ¹² H ₃ Si ²⁸ Cl ³⁵ Cl ³⁷	3- 114	10, , ← 9, ,	Ground					34 400.	20.
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	8, ← 7,	Excited					34 406.36	.5
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 407.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 1, 8← 9, 0, 9	Ground					34 407.03	.1
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					34 407.9	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 1, 8← 9, 0, 9	Ground					34 408.24	.1
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						34 410.	
C ¹² *D ₂ S ³² C ¹² *D ₂	4- 853	2, 1, 1← 1, 1, 0	Ground					34 412.0	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					34 417.86	.1
g-C ¹² H ₂ Cl ³⁵ C ¹² H ₂ Cl ³⁵	3- 451	3, 2, 2← 2, 1, 1						34 418.	
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 426.34	.1
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	8, ← 7,	Excited					34 426.86	.5
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 0← 1, 1, 0	Ground		1/2		1/2	34 428.02	
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2,15←15, 3,12	Ground		31/2		29/2	34 429.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 429.2	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 0← 1, 1, 0	Ground		3/2		3/2	34 430.59	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 0← 1, 1, 0	Ground		7/2		5/2	34 433.37	
O ¹⁶ F ₂ ¹⁹	4-1611	37, 7,31←36, 8,28	Ground					34 434.95	.10
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 0← 1, 1, 0	Ground					34 436.37	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 437.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 437.0	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 0← 1, 1, 0	Ground		5/2		3/2	34 441.75	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 0← 1, 1, 0	Ground		3/2		1/2	34 443.60	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 0← 1, 1, 0	Ground		5/2		5/2	34 449.00	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 463.4	
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2,15←15, 3,12	Ground		29/2		27/2	34 463.4	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 468.4	
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	2, 2, 0← 1, 1, 1	Ground					34 472.81	.03
C ¹² H ₃ Ge ⁷⁶ H ₃	3- 285	2, 0← 1, 0	Ground					34 485.90	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 488.25	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					34 488.3	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 490.	5.
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 3← 3, 2, 2	Ground		9/2		9/2	34 508.11	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 3← 3, 2, 2	Ground		7/2		7/2	34 510.72	
c-HF ¹⁹ C ¹² :C ¹³ HF ¹⁹	4- 692	2, 1, 2← 1, 0, 1	Ground					34 512.86	.05
C ¹² H ₃ Ge ⁷⁴ H ₃	3- 284	2, 0← 1, 0	Ground					34 514.5	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 515.	5.
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 1, 2← 2, 0, 2	Ground		7/2		7/2	34 515.29	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 3← 3, 2, 2	Ground		11/2		11/2	34 515.53	
C ¹² H ₃ Ge ⁷⁴ H ₃	3- 284	2, 0← 1, 0	Ground					34 517.6	.10
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 3← 3, 2, 2	Ground		5/2		5/2	34 518.11	
C ¹² Cl ₃ ³⁵ F ¹⁹	4- 191	7, ← 6,	Ground					34 520.42	.01
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 1, 2← 2, 0, 2	Ground		3/2		1/2	34 521.01	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 1, 2← 2, 0, 2	Ground		9/2		7/2	34 525.30	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 527.38	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	3, 1, 2← 2, 0, 2	Ground		7/2		5/2	34 527.65	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					34 527.7	
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	6, 5← 5, 5	Ground					34 533.23	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	6, 4← 5, 4	Ground					34 533.91	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	6, 3← 5, 3	Ground					34 534.47	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	6, 2← 5, 2	Ground					34 534.86	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	6, 0← 5, 0	Ground					34 535.09	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	6, 1← 5, 1	Ground					34 535.09	.10
C ¹² H ₃ O ¹⁸ H	3- 217	9, 2, ← 9, 1,	Ground					34 536.74	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						34 540.	3.
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	2, 2, 0← 2, 1, 2	Ground					34 540.	10.
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 1, 3← 3, 1, 2	Ground					34 546.63	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 557.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 4, 8←10, 5, 5	Ground					34 570.45	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 4, 8←10, 5, 5	Ground					34 571.04	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					34 572.69	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 4, 8←10, 5, 5	Ground					34 574.92	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 580.	5.
D ₂ O ₂ ¹⁶	3- 42	Not Reported						34 583.	3.
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 1, 2← 1, 1, 1	Ground	2			1	34 583.03	.1
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 1, 2← 1, 1, 1	Ground	3			2	34 584.33	.1
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 1, 2← 1, 1, 1	Ground	1			0	34 585.59	.1
C ¹² H ₂ :C ¹² HC ¹² F ¹⁹ :C ¹² H ₂	3- 911	5, 1, 5← 4, 0, 4	Ground					34 586.04	.03
HDO ₂ ¹⁶	3- 43	10, , ←10, ,						34 598.	3.
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 598.00	.1
C ¹² H ₃ Ce ⁷⁴ H ₃	3- 284	2, 0← 1, 0	Ground					34 598.62	.10
(C ¹² H ₃) ₂ C ¹³ H ₃ N ¹⁴	3- 852	2, 2, 1← 1, 1, 1	Ground					34 603.5	.5
C ¹³ H ₃ (C ¹² H ₃) ₂ P ³¹	3- 862	3, 3, 1← 2, 2, 1	Ground					34 608.1	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	9, 1, 8← 9, 0, 9	Ground					34 611.20	.1
Si ²⁸ HCl ₃ ³⁵	4-1501	7, ← 6,	Ground					34 614.34	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 616.85	
O ^b O ^b O ^b	4-1847	Not Reported						34 622.	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	9, 1, 8← 9, 0, 9	Ground					34 623.	5.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					34 623.8	
C ¹² *H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁸ *	4-1093	6, 3, 3← 6, 3, 4	Ground					34 624.3	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						34 625.	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 1← 1, 1	Ground	1/2			1/2	34 627.16	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 1← 1, 1	Ground	3/2			5/2	34 627.42	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 1← 1, 1	Ground	1/2			3/2	34 627.42	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 1← 1, 1	Ground	7/2			5/2	34 627.42	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 1← 1, 1	Ground	3/2			1/2	34 627.42	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 1← 1, 1	Ground	5/2			5/2	34 627.64	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 1← 1, 1	Ground	3/2			3/2	34 627.64	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 1← 1, 1	Ground	5/2			3/2	34 627.81	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 0← 1, 0	Ground	1/2			3/2	34 628.16	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 0← 1, 0	Ground	3/2			3/2	34 628.58	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 0← 1, 0	Ground	3/2			5/2	34 628.85	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 0← 1, 0	Ground	5/2			3/2	34 628.85	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 0← 1, 0	Ground	1/2			1/2	34 628.85	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 0← 1, 0	Ground	7/2			5/2	34 628.85	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 0← 1, 0	Ground	5/2	5/2			34 629.27	
H ₃ B ¹¹ C ¹² O ¹⁶	4- 392	2, 0← 1, 0	Ground	3/2	1/2			34 629.27	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						34 630.	10.
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	9, 1, 8← 9, 0, 9	Ground					34 636.60	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						34 637.09	.1
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	4, 0, 4← 3, 1, 3	Ground					34 639.00	
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 4← 5, 3, 3	Ground					34 652.35	.05
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	8, ← 7,	Ground					34 652.66	.07
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 4← 5, 3, 3	Ground					34 653.19	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 4← 5, 3, 3	Ground					34 653.95	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 4← 5, 3, 3	Ground					34 654.08	.05
C ¹² H ₃ Ge ⁷³ H ₃	3- 283	2, 1← 1, 1	Ground	13/2	11/2			34 656.75	.10
C ¹² H ₃ Ge ⁷³ H ₃	3- 283	2, 1← 1, 1	Ground	11/2	9/2			34 657.23	.10
C ¹² H ₃ Ge ⁷³ H ₃	3- 283	2, 1← 1, 1	Ground	9/2	9/2			34 657.23	.10
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	8, ← 7,	Excited					34 659.03	.07
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	18, 2,16←19, 1, 9	Ground					34 662.	
Ge ⁷⁴ F ₃ ¹⁹ Cl ³⁵	4-1405	8, ← 7,	Ground					34 664.55	.30
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	8, ← 7,	Excited					34 664.83	.07
C ¹² H ₂ Cl ₂ ³⁷	4- 343	1, 1, 1← 0, 0, 0	Ground					34 665.3	.2
C ¹² D ₃ Si ^b H ₂ D	3- 329	2, 1, 2← 1, 1, 1						34 667.79	.2
C ¹² D ₃ N ¹⁴ H ₂	3- 263	7, , ← 6, ,						34 670.	
Ge ⁷² F ₃ ¹⁹ Cl ³⁵	4-1403	8, ← 7,	Ground					34 679.32	.30
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	6, 4, 2← 6, 3, 3	Ground					34 680.	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						34 680.	10.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	3, 1, 3← 2, 2, 0	Ground					34 682.5	.5
Ge ⁷⁰ F ₃ ¹⁹ Cl ³⁵	4-1401	8, ← 7,	Ground					34 694.71	.40
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	5, 2, 3← 5, 2, 4	Ground					34 704.2	.3
C ¹² DBr ₃ ⁷⁹	4- 243	14, ←13,	Ground					34 704.6	.5
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	2, 0, 2← 1, 0, 1	Ground					34 706.02	.2
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	2, 0, 2← 1, 0, 1	Ground					34 707.32	.2
Ge ⁷² HCl ₃ ³⁵	4-1492	8, ← 7,	Ground					34 707.67	.07
D ₂ O ₂ ¹⁶	3- 42	Not Reported						34 709.	3.
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						34 711.88	
Ge ⁷² HCl ₃ ³⁵	4-1492	8, ← 7,	Excited					34 715.29	.07
C ¹² H ₃ Ge ⁷² H ₃	3- 282	2, 0← 1, 0	Ground					34 717.54	.10
Ge ⁷² HCl ₃ ³⁵	4-1492	8, ← 7,	Excited					34 719.42	.07
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 4, 7←10, 5, 6	Ground					34 722.35	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					34 722.92	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 4, 7←10, 5, 6	Ground					34 724.83	.1
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	12, ←11,						34 725.2	.4
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	12, 2,10←13, 1,13	Ground					34 726.	
C ¹² *H ₂ C ¹² D:C ¹² *H	4-1032	7, 4, 3← 7, 4, 4	Ground					34 726.6	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	11, 4, 7←10, 5, 6	Ground					34 726.82	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 733.89	
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 0, 2← 1, 0, 1	Ground	2	2			34 734.07	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 0, 2← 1, 0, 1	Ground	1		0		34 734.07	.1
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 0, 2← 1, 0, 1	Ground	2		1		34 735.23	.1
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 0, 2← 1, 0, 1	Ground	3		2		34 735.23	.1
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	12, ←11,						34 736.9	.4
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 0, 2← 1, 0, 1	Ground	1		1		34 737.20	.1
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Ground					34 749.0	.3
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	12, ←11,						34 753.2	.4
C ¹² D ₃ N ¹⁴ D ₂	3- 262	2, 1, 2← 2, 0, 2	Ground					34 755.67	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 760.	5.
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Ground					34 760.9	.3
C ¹² H ₃ O ¹⁸ H	3- 217	26, 2, ←26, 1,	Ground					34 761.75	.1
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	8, ← 7,	Ground					34 763.48	.07
C ¹² H ₃ C ¹² O ¹⁶ C ¹² N ¹⁴	3- 671	11, 4, 7←11, 3, 8	Ground					34 771.	.2
C ¹² H ₃ O ¹⁶ N ¹⁴ O ₂ ¹⁶	3- 181	4, 1, 3← 3, 1, 2	Ground					34 771.44	.1
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	8, ← 7,	Excited					34 771.98	.07
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					34 773.1	
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Ground					34 774.0	.3
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Ground					34 775.7	.3
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	8, ← 7,	Excited					34 777.01	.07
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 1, 2← 1, 1, 1	Ground					34 777.62	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					34 778.6	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	12, ←11,	Ground					34 779.1	.3
(C ¹² H ₃) ₃ P ³¹	3- 861	3, 1← 2, 1	Excited					34 782.7	
P ³¹ O ¹⁶ Cl ₃ ³⁷	4-1512	9, ← 8,	Ground					34 783.0	.5
D ₂ O ₂ ¹⁶	3- 42	Not Reported						34 785.	3.
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					34 790.4	
C ¹² H ₃ C ¹³ H:C ¹² H ₂	3- 744	2, 0, 2← 1, 0, 1	Ground					34 793.13	.03
C ¹² H ₃ C ¹³ H:C ¹² H ₂	3- 744	2, 0, 2← 1, 0, 1	Ground					34 793.38	.03
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 796.	5.
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Ground					34 800.0	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 804.	5.
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	24, 2,23←23, 3,20	Ground					34 814.	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	12, ←11,						34 814.1	.4
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Ground					34 814.84	.05
t-DHC ¹² :C ¹² HF ¹⁹	4- 788	2, 1, 2← 1, 1, 1	Ground					34 820.3	.3
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 9← 9, 9	Ground					34 822.04	.1
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	12, ←11,						34 822.4	.4
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 1, 4← 3, 1, 3	Ground					34 824.10	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 8← 9, 8	Ground					34 826.67	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 7← 9, 7	Ground					34 830.70	.1
C ¹² H ₃ O ¹⁸ H	3- 217	10, 2, ←10, 1,	Ground					34 831.64	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 833.	5.
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 6← 9, 6	Ground					34 834.26	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					34 835.1	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 1, 2← 1, 1, 1	Excited					34 835.37	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 5← 9, 5	Ground		34 837.21	.1
(C ¹² H ₃) ₃ P ³¹	3- 861	3, 2← 2, 2	Excited		34 837.25	.03
(C ¹² H ₃) ₃ P ³¹	3- 861	3, ← 2,	Ground		34 839.	
(C ¹² H ₃) ₃ P ³¹	3- 861	3, 1← 2, 1	Excited		34 839.05	.03
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 4← 9, 4	Ground		34 839.63	.1
(C ¹² H ₃) ₃ P ³¹	3- 861	3, 0← 2, 0	Excited		34 839.96	.03
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 3← 9, 3	Ground		34 841.53	.1
C ¹² H ₃ Ge ⁷⁰ H ₃	3- 281	2, 0← 1, 0	Ground		34 842.46	.10
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Ground		34 842.61	.05
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 2← 9, 2	Ground		34 842.86	.1
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 1, 2← 1, 1, 1	Excited		34 842.90	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 1← 9, 1	Ground		34 843.65	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 0← 9, 0	Ground		34 843.89	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			34 847.	5.
c-C ¹² H ₃ C ¹² H:C ¹² HD	3- 745	2, 1, 1← 1, 1, 0	Ground		34 849.69	.05
c-C ¹² H ₃ C ¹² H:C ¹² HD	3- 745	2, 1, 1← 1, 1, 0	Ground		34 850.14	.05
C ¹² H ₃ C ¹² H:C ¹² H ₂	3- 741	2, 0, 2← 1, 0, 1	Ground		34 851.27	.03
C ¹² H ₃ C ¹² H:C ¹² H ₂	3- 741	2, 0, 2← 1, 0, 1	Ground		34 851.52	.03
C ¹² D ₃ N ¹⁴ D ₂	3- 262	2, 1, 2← 2, 0, 2	Ground		34 854.43	
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Ground		34 855.4	.3
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 1, 2← 1, 1, 1	Excited		34 857.04	
(C ¹² H ₃) ₃ P ³¹	3- 861	3, ← 2,	Ground		34 859.10	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported			34 860.	5.
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	1, 1, 1← 0, 0, 0	Ground		34 866.5	.2
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, 0← 1, 0	Ground		34 883.31	.03
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, 1← 1, 1	Ground		34 883.32	.03
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 1, 1← 1, 1, 0	Ground	2 1	34 884.32	.1
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 1, 1← 1, 1, 0	Ground	3 2	34 885.68	.1
C ¹² H ₂ DC ¹² N ¹⁴	4- 812	2, 1, 1← 1, 1, 0	Ground	1 0	34 886.97	.1
Cl ³⁷ C ¹³ N ¹⁴	4- 174	3← 2	Ground	9/2 7/2	34 889.05	
(C ¹² H ₃) ₃ P ³¹	3- 861	3, 1← 2, 1	Excited		34 894.2	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		34 896.7	
(C ¹² H ₃) ₃ P ³¹	3- 861	3, ← 2,	Ground		34 897.11	.03
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 1, 4← 3, 1, 3	Excited		34 898.0	.2
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 1← 9, 1	Excited		34 898.93	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	Not Reported			34 900.65	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	Not Reported			34 901.48	.1
C ¹² H ₃ Si ²⁸ Cl ³⁵ Cl ³⁷	3- 113	10, , ← 9, ,	Excited		34 902.3	.5
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	2, 1, 2← 1, 1, 1	Ground		34 903.6	
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	2, 1, 2← 3, 0, 3	Ground		34 903.64	.02
(C ¹² H ₃) ₃ P ³¹	3- 861	3, ← 2,	Excited		34 907.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		34 907.8	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 4← 9, 4	Excited		34 909.06	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 3← 9, 3	Excited		34 911.46	.1
C ¹² D ₃ N ¹⁴ D ₂	3- 262	2, 1, 2← 2, 0, 2	Ground		34 911.62	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 2← 9, 2	Excited					34 913.28	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 4← 9, 4	Excited					34 913.28	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 3← 9, 3	Excited					34 914.63	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 1← 9, 1	Excited					34 914.63	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 0← 9, 0	Excited					34 915.35	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 2← 9, 2	Excited					34 915.70	.1
O ^b O ^b O ^b	4-1847	Not Reported						34 919.	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 920.	5.
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	8, 6, 3← 8, 4, 4	Excited					34 926.2	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	10, 1← 9, 1	Excited					34 932.59	.1
C ¹² *H ₂ C ¹² H:C ¹² *H	4-1031	4, 2, 2← 4, 2, 3	Ground					34 935.4	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 939.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2,15←15, 3,12	Ground					34 941.3	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					34 942.56	
C ¹² D ₃ Si ^b H ₂ D	3- 329	2, 0, 2← 1, 0, 1						34 942.63	.2
(C ¹² H ₃) ₃ P ³¹	3- 861	3, ← 2,	Excited					34 943.46	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						34 949.	5.
HC ¹² N ¹⁴	4- 291	12←12	Excited					34 953.5	
(C ¹² H ₃) ₃ N ¹⁴	3- 851	2, ← 1,	Excited					34 955.6	.3
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						34 962.4	.5
(C ¹² H ₃) ₂ S ³²	3- 601	2, 1, 2← 1, 0, 1	Ground					34 962.82	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 1, 2← 1, 0, 1	Ground					34 963.06	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 1, 2← 1, 0, 1	Ground					34 963.29	.05
s-C ¹² H ₂ DC ¹² H:C ¹² H ₂	3- 743	2, 1, 1← 1, 1, 0	Ground					34 966.94	.05
O ^b O ^b O ^b	4-1847	Not Reported						34 967.	
C ¹² H ₂ Cl ₂ ³⁵	4- 341	9, 1, 8← 9, 0, 9	Ground					34 970.	5.
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	2, 1, 2← 1, 0, 1	Ground					34 970.12	.05
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						34 995.0	.5
F ₃ ¹⁹ B ^b :N ^b (C ¹² H ₃) ₃	3- 801	10, ← 9,						35 000.	
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	10, 1, 9← 9, 2, 8	Ground					35 004.	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					35 004.7	.05
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	2, 0, 3← 2, 0, 2	Ground					35 013.50	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 0, 2← 1, 0, 1	Ground					35 024.2	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						35 028.	3.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					35 030.	20.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 032.	5.
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	12, ←11,						35 032.9	.4
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	16, ←15,	Excited					35 038.3	.4
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	5, 4, 1← 5, 3, 2	Ground					35 040.3	.2
HC ¹² N ¹⁴	4- 291	12←12	Excited					35 043.24	.1
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	16, ←15,	Excited					35 044.9	.4
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	12, ←11,						35 045.8	.4
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	3, 1, 3← 2, 1, 2	Ground					35 049.0	.1
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	8, 6, 3← 8, 4, 4	Ground					35 051.33	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 057.	5.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 0, 2← 1, 0, 1	Ground					35 060.	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	12, ←11,						35 061.2	.4
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	16, ←15,	Excited					35 064.7	.4
C ¹² H ₂ Cl ₂ ³⁵	4- 341	1, 1, 1← 0, 0, 0	Ground					35 067.0	.2
Cl ³⁷ C ¹² N ¹⁴	4- 173	3← 2	Ground	7/2		7/2		35 067.99	
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	8, 4, 4← 8, 3, 5	Ground					35 068.	
C ¹² H ₃ C ¹² H:C ¹³ H ₂	3- 749	2, 1, 1← 1, 1, 0	Ground					35 075.07	.7
C ¹³ H ₃ C ¹² H:C ¹² H ₂	3- 748	2, 1, 1← 1, 1, 0	Ground					35 076.09	.7
C ¹² H ₃ C ¹² H:C ¹³ H ₂	3- 749	2, 1, 1← 1, 1, 0	Ground					35 076.09	.10
C ¹³ H ₃ C ¹² H:C ¹² H ₂	3- 748	2, 1, 1← 1, 1, 0	Ground					35 077.02	.10
Cl ³⁷ C ¹² N ¹⁴	4- 173	3← 2	Ground	3/2		1/2		35 080.39	
Cl ³⁷ C ¹² N ¹⁴	4- 173	3← 2	Ground	5/2		3/2		35 080.39	
c-HF ¹⁹ C ¹² :C ¹² HF ¹⁹	4- 691	2, 1, 2← 1, 0, 1	Excited					35 083.75	.05
Cl ³⁷ C ¹² N ¹⁴	4- 173	3← 2	Ground	9/2		7/2		35 084.15	
Cl ³⁷ C ¹² N ¹⁴	4- 173	3← 2	Ground	7/2		5/2		35 084.15	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	16, ←15,	Ground					35 085.2	.3
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	12, ←11,	Ground					35 087.4	.3
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	3, 0, 3← 2, 0, 2	Ground					35 089.71	.10
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 090.	
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 0, 2← 1, 0, 1	Ground					35 091.16	.10
t-DHC ¹² :C ¹² DF ¹⁹	4- 791	2, 1, 2← 1, 1, 1	Ground					35 091.6	.3
Cl ³⁷ C ¹² N ¹⁴	4- 173	3← 2	Ground	5/2		5/2		35 091.97	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	3, 0, 2← 2, 0, 1	Ground					35 097.0	.1
F ¹⁹ HC ¹² O ¹⁶	4- 271	2, 0, 2← 1, 1, 1						35 097.26	.04
F ¹⁹ HC ¹² O ¹⁶	4- 271	1, 1, 1← 2, 0, 2						35 097.5	.1
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 100.	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						35 100.	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	8, ← 7,	Excited					35 107.16	.3
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	16, ←15,	Excited					35 111.0	.4
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 114.	5.
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	4, 2, 3← 3, 2, 2	Excited					35 116.8	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	4, 2, 3← 3, 2, 2	Excited					35 120.0	
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	12, ←11,						35 121.9	.4
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	4, 2, 3← 3, 2, 2	Excited					35 126.2	
N ¹⁴ O ₂ ¹⁶ Cl ³⁵	4-1461	4, 2, 3← 3, 2, 2	Excited					35 129.4	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	8, ← 7,	Excited					35 133.71	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 134.	5.
N ¹⁴ H ₃	4-1771	14,14←14/14	Ground					35 134.44	.10
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						35 135.7	.5
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	16, ←15,	Excited					35 136.4	.4
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					35 140.	20.
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	1, 1, 1← 2, 0, 2	Ground					35 143.	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	16, ←15,	Excited					35 145.9	.4
C ¹² D ₃ N ¹⁴ D ₂	3- 262	2, 1, 2← 2, 0, 2	Ground					35 151.58	
c-C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹ .A	3- 701	3, 2, 1← 3, 1, 2						35 155.36	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	8, ← 7,	Ground					35 157.01	.3
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	26, 2,24←26, 2,25	Ground					35 159.06	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					35 161.6	.1
P ³¹ O ¹⁸ F ¹⁹	4-1672	4, ← 3,	Ground					35 162.0	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 165.	
S ³² O ¹⁶ F ¹⁹	4-1621	Not Reported						35 169.52	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	6, , ← 6, ,						35 171.4	.5
C ¹³ HCl ³⁵ F ¹⁹	4- 253	3, 1, 2← 2, 0, 2	Ground					35 175.15	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					35 185.	
Cl ₂ O ¹⁶	4-1484	13, 2,11←14, 1,14	Ground					35 190.95	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	8, ← 7,	Excited					35 198.47	.3
Cl ₂ O ¹⁶	4-1484	13, 2,11←14, 1,14	Ground					35 200.66	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						35 202.1	.5
Cl ₂ O ¹⁶	4-1484	13, 2,11←14, 1,14	Ground					35 202.77	
Cl ₂ O ¹⁶	4-1484	13, 2,11←14, 1,14	Ground					35 204.82	
C ¹² H ₃ O ¹⁸ H	3- 217	11, 2, ←11. 1.	Ground					35 206.11	.1
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	2, 1, 2← 1, 1, 1	Ground					35 206.37	.5
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					35 207.8	
C ¹² HCl ³⁵ F ¹⁹	4- 251	8, 4, 5← 8. 3, 5	Ground					35 209.96	.04
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 210.	5.
Cl ₂ O ¹⁶	4-1484	13, 2,11←14, 1,14	Ground					35 212.77	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 215.	
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	8, 1← 7, 2	Ground					35 219.0	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	8, ← 7,	Excited					35 219.92	.3
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 2, 1← 1, 1, 0	Ground					35 220.0	.04
C ¹² D ₃ Si ^b H ₂ D	3- 329	2, 1, 1← 1, 1, 0						35 221.73	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 228.	5.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	23,15, ←24,14,	Ground					35 237.97	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	23,15, ←24,14,	Ground					35 238.67	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	23,15, ←24,14,	Ground					35 238.97	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					35 241.	
S ³² O ¹⁶ F ¹⁹	4-1621	Not Reported						35 242.02	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 255.73	
C ¹² H ₂ Cl ₂ ³⁵	4- 341	1, 1, 1← 0, 0, 0	Excited					35 258.	2.
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	6, 1, 5← 5, 2, 4	Ground					35 263.45	.10
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 267.	5.
C ¹² HCl ³⁵ F ¹⁹	4- 251	3, 1, 2← 2, 0, 2	Ground	7/2		7/2		35 275.12	
O ¹⁶ O ¹⁸ O ¹⁶	4-1843	10, 1, 9← 9, 2, 8	Ground					35 280.	
C ¹² HCl ³⁵ F ¹⁹	4- 251	3, 1, 2← 2, 0, 2	Ground	3/2		1/2		35 282.61	
C ¹² HCl ³⁵ F ¹⁹	4- 251	3, 1, 2← 2, 0, 2	Ground	5/2		3/2		35 285.66	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 288.	5.
C ¹² HCl ³⁵ F ¹⁹	4- 251	3, 1, 2← 2, 0, 2	Ground	9/2		7/2		35 288.02	
C ¹² HCl ³⁵ F ¹⁹	4- 251	3, 1, 2← 2, 0, 2	Ground					35 288.25	.05
C ¹² HCl ³⁵ F ¹⁹	4- 251	3, 1, 2← 2, 0, 2	Ground	7/2		5/2		35 290.94	
C ¹² HCl ³⁵ F ¹⁹	4- 251	3, 1, 2← 2, 0, 2	Ground	5/2		5/2		35 296.90	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² HCl ³⁵ F ¹⁹	4- 251	3, 1, 2← 2, 0, 2	Ground		3/2		3/2	35 298.48	
C ¹² *H ₂ C ¹² D:C ¹² *H	4-1032	12, 7, 5←12, 7, 6	Ground					35 306.1	
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	3, 2, 2← 2, 2, 1	Ground					35 315.64	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						35 320.94	
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	2, 1, 2← 1, 1, 1	Ground					35 321.1	.5
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						35 324.7	.5
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Excited					35 325.	20.
HDO ₂ ¹⁶	3- 43	9, , ← 9, ,						35 332.	3.
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	3, 3, 0← 3, 2, 2	Ground					35 334.4	.5
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Excited					35 335.	20.
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 335.	
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	3, 3, 1← 3, 2, 2	Ground					35 341.	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 5← 5, 5	Ground		6		5	35 343.50	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 4← 5, 4	Ground		6		5	35 344.44	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 5← 5, 5	Ground		7		6	35 344.65	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 5← 5, 5	Ground		5		4	35 344.91	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 4← 5, 4	Ground		7		6	35 345.15	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 4← 5, 4	Ground		5		4	35 345.15	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 3← 5, 3	Ground		6		5	35 345.15	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 0, 2← 1, 0, 1	Ground					35 345.20	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 2← 5, 2	Ground		6		5	35 345.60	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 3← 5, 3	Ground		6		5	35 345.60	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 3← 5, 3	Ground		7		6	35 345.60	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 2← 5, 2	Ground		5		4	35 345.90	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 2← 5, 2	Ground		6		5	35 345.90	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 0← 5, 0	Ground		6		5	35 346.03	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 1← 5, 1	Ground		7		6	35 346.03	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 0← 5, 0	Ground		5		4	35 346.03	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 1← 5, 1	Ground		6		5	35 346.03	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 0← 5, 0	Ground		7		6	35 346.03	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	6, 1← 5, 1	Ground		5		4	35 346.03	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 350.	5.
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	1, 1, 1← 0, 0, 0	Ground					35 350.54	.05
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 355.	5.
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 2, 1← 1, 1, 0	Ground					35 371.46	.04
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 373.8	
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 2, 1← 1, 1, 0	Ground					35 381.40	.04
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	1, 0, 1← 0, 0, 0	Excited					35 383.36	
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	2, 1, 2← 1, 1, 1	Ground					35 385.5	.5
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 0, 2← 1, 0, 1	Excited					35 388.20	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Excited					35 390.	20.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 392.	5.
C ¹² H ₃ Si ²⁸ Cl ₃ ³⁵	3- 111	10, ← 9,	Excited					35 396.71	.5
(C ¹² H ₃) ₃ C ¹³ Cl ³⁷	3- 974	6, ← 5,	Ground					35 397.3	
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2,15←15, 3,12	Ground		29/2		27/2	35 399.6	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 399.6	.05
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 0, 4← 3, 1, 3	Ground					35 399.6	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	48,24, ←47,25,	Ground					35 400.94	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	48,24, ←47,25,	Ground					35 401.45	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	24,11, ←23,12,	Ground					35 402.99	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	24,11, ←23,12,	Ground					35 403.15	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	24,11, ←23,12,	Ground					35 403.83	.1
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 1← 1, 1, 1	Ground	3/2		3/2		35 412.78	
As ⁷⁵ H ₂ D	4- 32	1, 1, 1← 1, 0, 1	Ground	1/2		3/2		35 413.79	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 1← 1, 1, 1	Ground	7/2		5/2		35 416.22	
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 418.5	.05
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 1← 1, 1, 1	Ground					35 418.51	.10
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 418.7	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2,15←15, 3,12	Ground	31/2		29/2		35 418.8	
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 0, 4← 3, 1, 3	Ground					35 418.8	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 420.	5.
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	2, 1, 2← 1, 1, 1	Excited					35 422.0	.5
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 1← 1, 1, 1	Ground	5/2		3/2		35 422.15	
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 1← 1, 1, 1	Ground	3/2		1/2		35 425.55	
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	2, 1, 2← 1, 1, 1	Excited					35 425.8	.2
C ¹² HCl ³⁷ F ₂ ¹⁹	4- 252	2, 2, 1← 1, 1, 1	Ground	5/2		5/2		35 429.16	
As ⁷⁵ H ₂ D	4- 32	1, 1, 1← 1, 0, 1	Ground	5/2		3/2		35 430.10	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 3← 3, 2, 2	Ground	9/2		9/2		35 433.63	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 435.	5.
As ⁷⁵ H ₂ D	4- 32	1, 1, 1← 1, 0, 1	Ground	5/2		5/2		35 435.19	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 3← 3, 2, 2	Ground	7/2		7/2		35 436.91	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 440.	
c-HDC ¹² :C ¹² DF ¹⁹	4- 789	2, 0, 2← 1, 0, 1	Ground					35 441.4	.3
(C ¹² H ₃) ₃ C ¹² Cl ³⁷	3- 972	6, ← 5,	Ground					35 442.3	.3
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 3← 3, 2, 2	Ground	11/2		11/2		35 443.08	
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2,15←15, 3,12	Ground	33/2		31/2		35 444.0	
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 0, 4← 3, 1, 3	Ground					35 444.0	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 3← 3, 2, 2	Ground	5/2		5/2		35 446.36	
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 447.1	.05
As ⁷⁵ H ₂ D	4- 32	1, 1, 1← 1, 0, 1	Ground	3/2		3/2		35 450.51	
C ¹² H ₂ Cl ₂ ³⁵	4- 341	1, 1, 1← 0, 0, 0	Excited					35 451.	5.
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 0, 2← 1, 0, 1	Excited					35 451.85	
O ¹⁶ F ₂ ¹⁹	4-1611	19, 3,17←18, 4,14	Ground					35 455.35	.10
As ⁷⁵ H ₂ D	4- 32	1, 1, 1← 1, 0, 1	Ground	3/2		5/2		35 455.64	
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 456.1	.05
C ¹² H ₂ F ¹⁹ C ¹² N ¹⁴	4- 701	5, 1, 4← 5, 0, 5	Ground					35 457.5	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 457.9	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 459.6	.05
As ⁷⁵ H ₂ D	4- 32	1, 1, 1← 1, 0, 1	Ground	3/2		1/2		35 460.08	
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	4, 1, 4← 3, 1, 3	Ground					35 463.23	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ± MHz
D ₂ O ₂ ¹⁶	3- 42	Not Reported						35 466.	3.
(C ¹² H ₃) ₂ C ¹² O ¹⁶	3- 751	2, 2, 1← 1, 1, 0	Ground					35 468.06	.04
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 475.3	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	16, 2, 15←15, 3, 12	Ground	35/2		33/2		35 477.4	
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 0, 4← 3, 1, 3	Ground					35 477.4	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					35 478.55	.1
C ^b _* H ₂ ^b N ^b H ^b C ^b _* H ₂ ^b	4- 863	Not Reported						35 480.	10.
C ¹² H ₃ Si ²⁸ D ₂ F ¹⁹	3- 245	3, 2, 2← 2, 2, 1	Ground					35 485.60	.10
HC ¹³ ; C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 486.	5.
HC ¹³ ; C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 493.	5.
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 495.7	.05
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 0, 4← 3, 1, 3	Ground					35 496.4	
C ¹² Cl ₃ ³⁷ C ¹² N ¹⁴	4- 584	11, ←10,	Ground					35 499.4	1.0
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					35 511.81	
HDC ¹² ; C ¹² F ₂ ¹⁹	4- 682	3, 1, 3← 2, 1, 2	Ground					35 512.2	.3
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	3, 0, 3← 2, 0, 2	Ground					35 514.66	.10
D ₂ O ₂ ¹⁶	3- 42	Not Reported						35 515.	3.
C ¹² _* H ₂ S ³² C ¹² _* H ₂	4- 851	7, 2, 6← 7, 2, 5	Ground					35 515.3	
HC ¹³ ; C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 518.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 521.54	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					35 521.62	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Excited					35 525.	20.
t-C ¹² H ₃ C ¹² H; C ¹² HC ¹² N ¹⁴	3- 921	8, 1, ← 7, 1,	Ground					35 526.03	.5
t-HDC ¹² _* O ¹⁶ C ¹² _* HD	4- 844	1, 1, 1← 0, 0, 0	Ground					35 528.56	.05
C ¹² H ₃ C ¹² _* HO ¹⁶ C ¹² _* H ₂	3- 761	12, 2, 10←12, 1, 11	Ground					35 537.88	.1
C ¹² _* H ₂ S ^b C ¹² _* H ₂ ^b	4- 854	Not Reported						35 538.0	.5
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 1← 1, 1, 1	Ground	1/2		3/2		35 541.81	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 543.34	
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 0, 4← 3, 1, 3	Ground					35 545.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 545.3	.05
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 547.33	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Excited					35 550.	20.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 552.2	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 1← 1, 1, 1	Ground	3/2		3/2		35 557.98	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						35 560.	3.
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 1← 1, 1, 1	Ground	7/2		5/2		35 562.30	
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 1← 1, 1, 1	Ground					35 565.3	.2
C ¹² H ₃ C ¹² _* HO ¹⁶ C ¹² _* H ₂	3- 761	2, 1, 2← 1, 0, 1	Ground					35 566.15	.1
C ¹² H ₃ C ¹² _* HO ¹⁶ C ¹² _* H ₂	3- 761	Not Reported	Ground					35 571.32	.1
S ³² O ¹⁶ F ₂ ¹⁹	4-1621	Not Reported						35 574.23	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Excited					35 575.	20.
C ¹² H ₂ ; C ¹² HC ¹² HO ¹⁶	3- 691	4, 0, 4← 3, 0, 3	Ground					35 577.96	
HC ¹³ ; C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 578.	5.
C ¹² HCl ³⁵ F ₂ ¹⁹	4- 251	2, 2, 1← 1, 1, 1	Ground	5/2		5/2		35 578.59	
D ₂ N ¹⁵ C ¹² HO ¹⁶	3- 161	2, 1, 2← 1, 1, 1	Ground					35 586.15	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ N ¹⁴ H ₂	3- 263	5, , ← 5, ,						35 588.1	.5
Cl ³⁵ O ₂ ¹⁶	4-1381	9, 3, 6←10, 2, 9	Ground					35 589.1	.05
Cl ³⁷ O ₂ ¹⁶	4-1382	4, 0, 4← 3, 1, 3	Ground					35 589.7	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	5, , ← 5, ,						35 590.6	.5
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Ground					35 593.4	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 597.59	
C ^b _* H ₂ N ^b H ^b C ^b _* H ₂	4- 863	Not Reported						35 600.	10.
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 602.	5.
C ¹² H ₂ Cl ₂ ³⁷	4- 343	10, 1, 9←10, 0,10	Ground					35 614.	5.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Excited					35 615.	20.
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	3, 2, 1← 2, 2, 0	Ground					35 616.20	.1
Cl ³⁵ C ¹³ N ¹⁴	4- 172	3← 2	Ground	7/2		7/2		35 618.81	
C ¹² _* H ₂ C ¹² H:C ¹² _* H	4-1031	1, 0, 1← 0, 0, 0	Ground					35 621.3	
Cl ³⁵ C ¹³ N ¹⁴	4- 172	3← 2	Ground	5/2		3/2		35 634.85	
Cl ³⁵ C ¹³ N ¹⁴	4- 172	3← 2	Ground	3/2		1/2		35 634.85	
Cl ³⁵ C ¹² N ¹⁴	4- 171	3← 2	Ground					35 638.	
Cl ³⁵ C ¹³ N ¹⁴	4- 172	3← 2	Ground	9/2		7/2		35 639.78	
Cl ³⁵ C ¹³ N ¹⁴	4- 172	3← 2	Ground	7/2		5/2		35 639.78	
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	4, 2, 3← 4, 0, 4	Ground					35 643.3	.3
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	5, 3, 3← 5, 1, 4	Ground					35 643.3	.3
Cl ³⁵ C ¹³ N ¹⁴	4- 172	3← 2	Ground	5/2		5/2		35 649.56	
S ³⁴ F ¹⁹ Cl ³⁷	4-1424	10, ← 9,	Ground					35 654.02	.5
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					35 655.46	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Excited					35 660.	20.
C ¹² H ₃ O ¹⁸ H	3- 217	12, 2, ←12, 1,	Ground					35 661.78	.1
(C ¹² H ₃) ₂ O ¹⁶	3- 591	4, 1, 3← 4, 0, 4	Ground					35 670.	20.
S ³² F ₅ Cl	4-1422	10, ← 9,	Ground					35 670.59	.5
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 2← 3, 2, 1	Excited					35 679.0	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 2← 3, 2, 1	Excited					35 681.7	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 2← 3, 2, 1	Excited					35 686.9	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 2← 3, 2, 1	Excited					35 689.5	
C ¹² H ₃ C ¹² _* HO ¹⁶ C ¹² _* H ₂	3- 761	12, 2,10←12, 1,11	Ground					35 690.23	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² Cl ³⁵	3- 975	6, 1, 6← 5, 1, 5	Ground					35 694.66	.20
C ¹² D ₃ N ¹⁴ D ₂	3- 262	1, 1, 1← 1, 0, 1	Ground					35 696.21	
a-C ¹² HD ₂ C ¹² HO ¹⁶	3- 482	2, 1, 1← 1, 1, 0	Ground					35 711.86	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 720.	5.
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 0, 4← 3, 0, 3	Ground					35 722.18	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 731.0	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						35 732.	3.
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					35 738.32	.1
C ¹² H ₃ C ¹² D:C ¹² H ₂	3- 747	2, 1, 1← 1, 1, 0	Ground					35 742.37	.05
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 0, 4← 3, 0, 3	Ground					35 742.5	.2
C ¹² H ₃ C ¹² D:C ¹² H ₂	3- 747	2, 1, 1← 1, 1, 0	Ground					35 742.81	.05
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 748.2	
C ¹² D ₃ O ¹⁶ H	3- 214	4, , ← 3, ,	Ground					35 748.2	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						35 750.	10.
HDC ¹² ;C ¹² F ₂ ¹⁹	4- 682	3, 0, 3← 2, 0, 2	Ground					35 751.8	.3
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	4, 0, 4← 3, 0, 3	Ground					35 752.72	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 754.19	
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	2, 1, 2← 1, 1, 1	Ground					35 775.8	.3
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 0, 4← 3, 0, 3	Excited					35 776.5	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					35 776.82	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	4, 0, 4← 3, 1, 3	Ground		3		2	35 782.59	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	4, 0, 4← 3, 1, 3	Ground		5		4	35 782.59	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	4, 0, 4← 3, 1, 3	Ground		4		3	35 783.93	.10
C ¹² *H ₂ S ^b C ¹² *H ₂	4- 854	Not Reported						35 785.0	1.
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² Cl ³⁵	3- 975	6, 0, 6← 5, 0, 5	Ground					35 785.80	.20
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	6, 4, 2← 6, 3, 3	Ground					35 791.	1.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 791.03	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 3← 3, 2, 2	Ground		4		3	35 791.80	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 3← 3, 2, 2	Ground					35 792.1	.2
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 792.1	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 3← 3, 2, 2	Ground		5		4	35 792.29	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 3← 3, 2, 2	Ground		3		2	35 792.29	.1
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	2, 0, 2← 1, 0, 1	Ground					35 797.8	.5
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	3, 2, 2← 2, 2, 1	Ground					35 799.60	.10
Cl ³⁵ C ¹² N ¹⁴	4- 171	3← 2	Ground	7/2		7/2		35 805.09	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					35 805.7	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 805.7	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 3← 3, 2, 2	Ground					35 806.3	.2
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	2, 0, 2← 1, 0, 1	Excited					35 809.7	.5
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 3← 3, 2, 2	Ground					35 810.8	.2
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					35 810.8	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						35 810.8	
C ¹² D ₃ N ¹⁴ D ₂	3- 262	1, 1, 1← 1, 0, 1	Ground					35 812.36	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 1← 3, 3, 0	Ground		4		3	35 813.85	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 2← 3, 3, 1	Ground		4		3	35 813.85	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 1← 3, 3, 0	Ground					35 814.6	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 2← 3, 3, 1	Ground					35 814.6	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 1← 3, 3, 0	Ground		3		2	35 814.96	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 2← 3, 3, 1	Ground		3		2	35 814.96	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 1← 3, 3, 0	Ground		5		4	35 814.96	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 2← 3, 3, 1	Ground		5		4	35 814.96	.1
Cl ³⁵ C ¹² N ¹⁴	4- 171	3← 2	Ground	5/2		3/2		35 820.65	
Cl ³⁵ C ¹² N ¹⁴	4- 171	3← 2	Ground	3/2		1/2		35 820.65	
Cl ³⁵ C ¹³ N ¹⁴	4- 172	3← 2	Ground					35 824.	
C ¹² H ₃ Si ²⁸ HDF ¹⁹	3- 252	3, 0, 3← 2, 0, 2	Ground					35 825.50	.10
Cl ³⁵ C ¹² N ¹⁴	4- 171	3← 2	Ground	9/2		7/2		35 825.95	
Cl ³⁵ C ¹² N ¹⁴	4- 171	3← 2	Ground	7/2		5/2		35 825.95	
C ¹² HD ₂ N ¹⁴ C ¹²	4- 839	2, 1, 2← 1, 1, 1	Ground					35 827.44	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 830.	5.
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 2← 3, 3, 1	Ground					35 830.4	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 1← 3, 3, 0	Ground					35 830.4	.2
Cl ³⁵ C ¹² N ¹⁴	4- 171	3← 2	Ground	5/2	5/2			35 835.74	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					35 840.37	.1
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 841.	5.
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	16, 1,15←16, 1,16	Ground					35 841.7	.5
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	16, 1,15←16, 1,16	Ground					35 844.4	.5
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 3← 3, 2, 2	Excited					35 844.6	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 2← 1, 0, 1	Ground					35 845.46	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 846.05	
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	4, 0, 4← 3, 0, 3	Ground					35 846.64	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 2← 1, 0, 1	Ground					35 850.67	.1
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 1, 4← 3, 1, 3	Ground					35 855.2	.2
C ¹² H ₃ S ³² H	3- 221	4, 0, ← 3, 1,	Ground					35 857.4	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 2← 3, 3, 1	Excited					35 861.4	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 3, 1← 3, 3, 0	Excited					35 861.4	.2
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 2← 3, 2, 1	Ground					35 866.1	.2
C ¹² D ₃ N ¹⁴ D ₂	3- 262	1, 1, 1← 1, 0, 1	Ground					35 866.30	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 2← 3, 2, 1	Ground					35 867.6	.2
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, , ← 4, ,						35 870.	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 2← 3, 2, 1	Ground					35 871.8	.2
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 872.	5.
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	20,10,10←20, 9,11	Ground	43/2	43/2			35 872.46	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	20,10,10←20, 9,11	Ground	37/2	37/2			35 872.46	
C ¹² H ₂ DSi ^b D ₃	3- 328	2, 1, 2← 1, 1, 1						35 873.39	.3
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 873.42	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	20,10,10←20, 9,11	Ground	41/2	41/2			35 874.50	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	20,10,10←20, 9,11	Ground	39/2	39/2			35 874.50	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 1, 7← 7, 2, 6	Ground	7	6			35 878.00	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 1, 7← 7, 2, 6	Ground	9	8			35 878.00	.10
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 2← 1, 0, 1	Ground					35 878.14	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	8, 1, 7← 7, 2, 6	Ground	8	7			35 879.33	.10
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	19,10, 9←19, 9,10	Ground	35/2	35/2			35 880.25	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	19,10, 9←19, 9,10	Ground	41/2	41/2			35 880.25	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	19,10, 9←19, 9,10	Ground	37/2	37/2			35 882.35	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	19,10, 9←19, 9,10	Ground	39/2	39/2			35 882.35	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	18,10, 8←18, 9, 9	Ground	39/2	39/2			35 886.40	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	18,10, 8←18, 9, 9	Ground	33/2	33/2			35 886.40	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	18,10, 8←18, 9, 9	Ground	37/2	37/2			35 888.78	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	18,10, 8←18, 9, 9	Ground	35/2	35/2			35 888.78	
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 890.	5.
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	17,10, 7←17, 9, 8	Ground	31/2	31/2			35 891.94	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	17,10, 7←17, 9, 8	Ground	37/2	37/2			35 892.06	
P ³¹ O ¹⁶ F ¹⁹ Cl ³⁵	4-1391	17,10, 7←17, 9, 8	Ground	33/2	33/2			35 894.58	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	17,10, 7←17, 9, 8	Ground	35/2	35/2			35 894.82	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16,10, 6←16, 9, 7	Ground	29/2	29/2			35 896.84	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16,10, 6←16, 9, 7	Ground	35/2	35/2			35 896.98	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16,10, 6←16, 9, 7	Ground	31/2	31/2			35 899.73	
C ^b ₂ H ^b ₂ N ^b H ^b C ^b ₂ H ^b ₂	4- 863	Not Reported						35 900.	10.
C ¹² Cl ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 583	11, , ←10, ,	Ground					35 900.0	20.
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	16,10, 6←16, 9, 7	Ground	33/2	33/2			35 900.04	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15,10, 5←15, 9, 6	Ground	27/2	27/2			35 900.79	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15,10, 5←15, 9, 6	Ground	33/2	33/2			35 901.03	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15,10, 5←15, 9, 6	Ground	29/2	29/2			35 904.14	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14,10, 4←14, 9, 5	Ground	25/2	25/2			35 904.14	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14,10, 4←14, 9, 5	Ground	31/2	31/2			35 904.84	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	15,10, 5←15, 9, 6	Ground	31/2	31/2			35 904.84	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13,10, 3←13, 9, 4	Ground	23/2	23/2			35 906.92	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13,10, 3←13, 9, 4	Ground	29/2	29/2			35 907.40	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14,10, 4←14, 9, 5	Ground	27/2	27/2			35 908.02	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	14,10, 4←14, 9, 5	Ground	29/2	29/2			35 908.44	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12,10, 2←12, 9, 3	Ground	27/2	27/2			35 909.08	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12,10, 2←12, 9, 3	Ground	21/2	21/2			35 909.76	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13,10, 3←13, 9, 4	Ground	25/2	25/2			35 911.44	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	13,10, 3←13, 9, 4	Ground	27/2	27/2			35 911.93	
C ¹² H ₃ Hg ²⁰² Br ⁸¹	4- 418	16, ←15,	Ground					35 912.50	
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² ₂ H ₂	3- 761	2, 1, 2← 1, 0, 1	Ground					35 913.04	.1
C ¹³ H ₃ (C ¹² H ₃) ₂ C ¹² Cl ³⁵	3- 975	6, 1, 5← 5, 1, 4	Ground					35 913.15	.20
C ¹² H ₃ S ³² H	3- 221	11, 1, ←10, 2,	Ground					35 913.5	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 1, 1← 1, 0, 1	Ground					35 913.83	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12,10, 2←12, 9, 3	Ground	23/2	23/2			35 914.45	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	12,10, 2←12, 9, 3	Ground	25/2	25/2			35 914.97	
H ₂ O ₂ ¹⁶	3- 41	Not Reported						35 916.	2.
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11,10, 1←11, 9, 2	Ground	21/2	21/2			35 917.00	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 1← 1, 1	Ground	1	2			35 917.66	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁵	4-1391	11,10, 1←11, 9, 2	Ground	23/2	23/2			35 917.82	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 1← 1, 1	Ground	2	2			35 917.96	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 1← 1, 1	Ground	5	4			35 917.96	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 1← 1, 1	Ground	2	3			35 918.29	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 1← 1, 1	Ground	3	4			35 918.29	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 1← 1, 1	Ground	4	4			35 918.29	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 1← 1, 1	Ground	3	3			35 918.55	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 1← 1, 1	Ground	4	3			35 918.55	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	2	3			35 919.08	
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 0, ← 7, 0,	Ground					35 919.24	.5
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	4	3			35 919.60	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	3	3			35 919.60	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	1	2			35 919.60	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	5	4			35 919.60	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F ₇ F ₁ F				Frequency MHz	Acc. ±MHz
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	2		2		35 919.95	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	4		4		35 920.22	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	3		4		35 920.22	
H ₃ B ¹⁰ C ¹² O ¹⁶	4- 391	2, 0← 1, 0	Ground	3		2		35 920.40	
HDC ¹² :C ¹² F ₂ ¹⁹	4- 682	6, 4, 3← 6, 2, 4	Ground					35 922.1	.3
HC ¹³ :C ¹² C ¹² DO ¹⁶	4- 922	Not Reported						35 924.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					35 924.22	
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 1, 1← 1, 1, 0	Excited					35 924.40	
C ¹² H ₃ C ¹² H ₂ C ¹² N ¹⁴	3- 731	4, 2, 2← 3, 2, 1	Excited					35 926.0	.2
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 2, ← 7, 2,	Ground					35 936.2	.5
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 1, 1← 1, 1, 0	Excited					35 941.43	
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 4, ← 7, 4,	Ground					35 942.6	.5
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 3, ← 7, 3,	Ground					35 942.6	.5
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 5, ← 7, 5,	Ground					35 943.5	.5
C ¹² DHCl ³⁵ Cl ³⁷	4- 345	2, 1, 2← 1, 0, 1	Ground					35 945.	2.
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 6, ← 7, 6,	Ground					35 945.6	.5
C ¹² H ₂ DSi ^b D ₃	3- 328	2, 1, 2← 1, 1, 1						35 946.59	.2
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 7, ← 7, 7,	Ground					35 948.4	.5
C ¹² H ₂ DSi ^b D ₃	3- 328	2, 1, 2← 1, 1, 1						35 950.03	.2
C ¹² H ₃ Hg ²⁰⁰ Br ⁸¹	4- 416	16, ←15,	Ground					35 960.40	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						35 975.	3.
C ¹² H ₃ Hg ¹⁹⁹ Br ⁸¹	4- 414	16, ←15,	Ground					35 984.46	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 2← 3, 2, 1	Ground	9/2		7/2		35 985.36	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		35 988.03	
s-C ¹² DH ₂ C ¹² H ₂ C ¹² H ₃	3- 785	1, 1, 1← 0, 0, 0	Ground					35 989.76	.12
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	2, 0, 2← 1, 0, 1	Ground					35 989.85	.3
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	2, 0, 2← 1, 0, 1	Ground					35 991.70	.3
HDO ₃ ¹⁶	3- 43	8, , ← 8, ,						35 992.	3.
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		35 993.27	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	4, 2, 2← 3, 2, 1	Ground	5/2		3/2		35 995.90	
s-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 247	3, 1, 2← 2, 1, 1	Ground					35 999.00	.10
C ¹² H ₃ Hg ¹⁹⁸ Br ⁸¹	4- 412	16, ←15,	Ground					36 008.79	
C ¹² HD ₂ N ¹⁴ C ¹²	4- 839	2, 0, 2← 1, 0, 1	Ground					36 013.96	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					36 015.0	
C ¹² H ₃ C ¹³ H:C ¹² H ₂	3- 744	2, 1, 1← 1, 1, 0	Ground					36 019.03	.03
C ¹² H ₃ C ¹³ H:C ¹² H ₂	3- 744	2, 1, 1← 1, 1, 0	Ground					36 019.84	.03
O ₃ ¹⁶	4-1841	23, 2,22←22, 3,19	Ground					36 023.	
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	10, 1, 9←10, 0,10	Ground					36 026.	5.
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					36 026.20	
O ¹⁶ F ₂ ¹⁹	4-1611	4, 0, 4← 3, 1, 3	Ground					36 028.73	.10
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, , ← 4, ,						36 030.	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					36 030.87	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						36 032.	3.
O ¹⁶ F ₂ ¹⁹	4-1611	37, 7,30←36, 8,29	Ground					36 036.82	.10
O ¹⁶ F ₂ ¹⁹	4-1611	28, 7,22←29, 6,23	Ground					36 045.54	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F	Frequency MHz	Acc. ±MHz
D ₂ C ¹² :C ¹² O ¹⁶	4- 712	2, 1, 1← 1, 0, 1	Excited		36 048.80	
C ¹² H ₃ C ¹² H:C ¹² H ₂	3- 741	2, 1, 1← 1, 1, 0	Ground		36 049.29	.03
C ¹² H ₃ C ¹² H:C ¹² H ₂	3- 741	2, 1, 1← 1, 1, 0	Ground		36 050.21	.03
C ¹² H ₃ H _g ²⁰⁴ Cl ³⁷	4- 451	9, ← 8,	Ground		36 073.62	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported			36 080.0	
t-DHC ¹² :C ¹² HF ¹⁹	4- 788	2, 0, 2← 1, 0, 1	Ground		36 081.3	.3
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	3, 2, 1← 2, 2, 0	Ground		36 083.60	.10
C ¹² H ₃ C ¹³ H ₂ C ¹² H ₃	3- 783	1, 1, 1← 0, 0, 0	Ground		36 083.69	.12
C ¹² H ₃ H _g ²⁰² Cl ³⁷	4- 448	9, ← 8,	Ground		36 085.75	
C ¹² H ₂ DSi ^b D ₃	3- 328	2, 0, 2← 1, 0, 1			36 097.35	.2
C ¹² H ₃ H _g ²⁰⁰ Cl ³⁷	4- 446	9, ← 8,	Ground		36 098.07	
DC ¹² :C ¹² C ¹² HO ¹⁶	4- 916	2, 1, 2← 3, 0, 3	Ground		36 099.79	.02
Cl ₂ O ¹⁶	4-1484	18, 1,17←17, 2,16	Ground		36 100.46	
C ¹² H ₃ H _g ¹⁹⁹ Cl ³⁷	4- 444	9, ← 8,	Ground		36 104.30	
D ₂ O ₂ ¹⁶	3- 42	Not Reported			36 105.	3.
c-HDC ¹² :C ¹² HF ¹⁹	4- 787	2, 1, 2← 1, 1, 1	Ground		36 109.5	.3
C ¹² D ₃ N ¹⁴ D ₂	3- 262	1, 1, 1← 1, 0, 1	Ground		36 109.50	
C ¹² H ₃ H _g ¹⁹⁸ Cl ³⁷	4- 442	9, ← 8,	Ground		36 110.53	
S ³⁴ P ³¹ F ₃ ¹⁹	4-1693	7, 6← 6, 6	Ground		36 115.78	.05
S ³⁴ P ³¹ F ₃ ¹⁹	4-1693	7, 3← 6, 3	Ground		36 116.47	.05
S ³⁴ P ³¹ F ₃ ¹⁹	4-1693	7, 0← 6, 0	Ground		36 116.72	.05
S ³⁴ P ³¹ F ₃ ¹⁹	4-1693	7, 1← 6, 1	Ground		36 116.72	.05
S ³⁴ P ³¹ F ₃ ¹⁹	4-1693	7, 2← 6, 2	Ground		36 116.72	.05
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	1, 1, 1← 0, 0, 0	Ground		36 119.4	
D ₂ O ₂ ¹⁶	3- 42	Not Reported			36 162.	3.
C ¹² H ₃ O ¹⁶ H	3- 211	4, 1, ← 3, 0,	Ground		36 169.24	.1
(C ¹² H ₃) ₃ C ¹³ Cl ³⁵	3- 973	6, ← 5,	Ground		36 171.1	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		36 172.20	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 1← 2, 1, 2	Ground		36 173.03	.1
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	5, 1, 5← 4, 1, 4	Excited	13/2 11/2	36 177.6	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported			36 180.	10.
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	5, 1, 5← 4, 1, 4	Excited	7/2 5/2	36 182.1	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	5, 1, 5← 4, 1, 4	Excited	11/2 9/2	36 184.2	
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground		36 192.0	.2
C ¹² H ₃ Si ²⁸ HDF ¹⁹	3- 252	3, 2, 1← 2, 2, 0	Ground		36 192.50	.10
C ¹² H ₃ O ¹⁸ H	3- 217	13, 2, ←13, 1,	Ground		36 193.55	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 1← 2, 1, 2	Ground		36 198.17	.1
C ¹² HD ₂ N ¹⁴ C ¹²	4- 839	2, 1, 1← 1, 1, 0	Ground		36 199.82	.1
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	2, 1, 1← 1, 1, 0	Ground		36 209.0	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		36 211.58	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	6, ← 5,	Ground		36 212.3	.10
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	5, 1, 5← 4, 1, 4	Ground	13/2 11/2	36 212.5	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 2, 1← 2, 1, 2	Ground		36 216.40	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		36 216.46	
t-C ¹² HD:C ¹² HBr ⁸¹	4- 743	5, 1, 5← 4, 1, 4	Ground	7/2 5/2	36 217.2	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² HD;C ¹² HBr ^b	4- 748	Not Reported	Ground		36 222.1	.1
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	2, 1, 1← 1, 1, 0	Excited		36 223.6	.5
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	2, 1, 1← 1, 1, 0	Excited		36 229.0	.5
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported			36 240.	
C ¹² H ₂ DSi ^b D ₃	3- 328	2, 1, 1← 1, 1, 0			36 246.17	.3
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground		36 248.14	.1
C ¹² H ₂ DSi ^b D ₃	3- 328	2, 1, 1← 1, 1, 0			36 249.26	.3
C ¹² ₂ H ₂ N ¹⁴ HC ¹² ₂ H ₂	4- 861	12,10, 3←12, 9, 3	Ground		36 250.	10.
(C ¹² H ₃) ₂ S ³²	3- 601	12, 2,11←11, 3, 8	Ground		36 258.98	.05
(C ¹² H ₃) ₂ S ³²	3- 601	12, 2,11←11, 3, 8	Ground		36 260.33	.05
(C ¹² H ₃) ₂ S ³²	3- 601	12, 2,11←11, 3, 8	Ground		36 261.67	.05
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	7, 3, 4← 7, 3, 5	Ground		36 263.9	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported			36 268.	3.
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	4, 0, 4← 3, 0, 3	Ground		36 270.16	
P ³¹ O ¹⁶ Cl ₃ ³⁵	4-1511	9, ← 8,	Ground		36 273.5	.5
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 1← 2, 1, 2	Ground		36 273.68	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 1← 2, 1, 2	Ground		36 273.81	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 1← 2, 1, 2	Ground		36 274.50	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 1← 2, 1, 2	Ground		36 275.25	.05
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, , ← 4, ,			36 280.	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		36 281.75	
C ¹² DHCl ₂ ³⁵	4- 344	2, 1, 2← 1, 0, 1	Ground		36 283.	2.
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	7, 4, 4← 7, 2, 5	Ground		36 291.4	.1
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	2, 1, 2← 1, 1, 1	Ground		36 293.37	.10
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	4, 2, 3← 3, 2, 2	Ground		35 298.87	
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	11, , ←10, ,	Ground		36 301.8	1.0
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	2, 1, 2← 1, 1, 1	Ground		36 309.26	.3
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	4, 3, 1← 3, 3, 0	Ground		36 310.02	
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	4, 3, 2← 3, 3, 1	Ground		36 310.02	
C ¹² H ₃ O ¹⁸ H	3- 217	25, 2, ←25, 1,	Ground		36 312.57	.1
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	2, 1, 2← 1, 1, 1	Ground		36 325.76	.2
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	4, 2, 2← 3, 2, 1	Ground		36 327.98	
C ¹³ H ₃ Br ⁸¹	4- 406	2, ← 1,	Ground		36 331.10	.09
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported			36 332.7	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground		36 332.7	.5
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	11, , ←10, ,	Excited		36 335.2	1.0
t-C ¹² H ₃ C ¹² H:C ¹² HC ¹² N ¹⁴	3- 921	8, 1, ← 7, 1,	Ground		36 340.65	.5
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² ₂ H ₂	3- 761	37,18, ←36,19,	Ground		36 348.78	.1
C ¹² H ₃ C ¹² ₂ HO ¹⁶ C ¹² ₂ H ₂	3- 761	37,18, ←36,19,	Ground		36 349.51	.1
C ^b ₂ H ₂ N ^b H ^b C ^b ₂ H ₂	4- 863	Not Reported			36 350.	10.
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	6, 2, 4← 6, 2, 5	Ground		36 351.2	.1
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground		36 354.69	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	6, 3, 4← 6, 1, 5	Ground		36 358.5	.1
C ¹³ H ₃ C ¹² H ₂ C ¹² H ₃	3- 782	1, 1, 1← 0, 0, 0	Ground		36 373.78	.12
C ¹² ₂ H ₂ N ¹⁴ HC ¹² ₂ H ₂	4- 861	6, 4, 2← 6, 3, 3	Ground		36 374.0	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	2, 1, 1← 1, 0, 1	Ground		36 379.9	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	5, 1, 5← 4, 1, 4	Excited	13/2 11/2	36 382.6	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	5, 1, 5← 4, 1, 4	Excited	11/2 9/2	36 388.5	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	5, 1, 5← 4, 1, 4	Excited	9/2 7/2	36 393.5	
C ¹³ H ₃ C ¹² HO	3- 476	2, 1, 2← 1, 1, 1	Ground		36 402.86	.3
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	5, 1, 4← 5, 1, 5	Ground		36 403.3	.1
C ¹² H ₃ C ¹² HF ¹⁹	3- 461	5, 2, 4← 5, 0, 5	Ground		36 403.3	.1
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	5, 1, 5← 4, 1, 4	Ground	13/2 11/2	36 418.4	
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, , ← 4, ,			36 420.	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground		36 422.9	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported			36 422.9	
t-C ¹² HD:C ¹² HBr ⁷⁹	4- 741	5, 1, 5← 4, 1, 4	Ground	11/2 9/2	36 423.9	
C ¹² H ₂ :C ¹² HC ¹² HO ¹⁶	3- 691	4, 1, 3← 3, 1, 2	Ground		36 436.03	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	1, 0, 1← 0, 0, 0			36 436.2	.5
C ¹² D ₃ N ¹⁴ H ₂	3- 263	1, 0, 1← 0, 0, 0			36 436.8	.5
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground		36 440.	20.
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground		36 450.	20.
C ¹² D ₃ N ¹⁴ H ₂	3- 263	4, , ← 4, ,			36 451.1	.5
C ¹² H ₂ Cl ₂ ³⁵	4- 341	10, 1, 9←10, 0,10	Ground		36 451.3	.3
C ¹² H ₃ N ¹⁴ H ₂	3- 261	4, 2, ← 5, 1,	Ground		36 452.1	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		36 452.1	
C ¹² H ₃ Hg ²⁰² Br ⁷⁹	4- 417	16, ←15,	Ground		36 476.28	
C ¹³ H ₃ Br ⁷⁹	4- 405	2, ← 1,	Ground		36 477.67	.09
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, , ← 4, ,			36 480.	
D ₂ O ₂ ¹⁶	3- 42	Not Reported			36 482.	3.
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported			36 483.9	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground		36 483.9	.5
O ¹⁶ C ¹² S ³²	4- 521	3← 2	Ground		36 488.82	.03
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported			36 489.52	
S ³² F ₃ Cl ³⁵	4-1421	10, ← 9,	Ground		36 490.59	.5
C ¹² *H ₂ C ¹² D:C ¹² *H	4-1032	4, 2, 2← 4, 2, 3	Ground		36 498.7	
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	2, 1, 2← 1, 1, 1	Ground		36 515.58	.2
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	9, ← 8,	Ground		36 521.8	.3
C ¹² H ₃ Hg ²⁰⁰ Br ⁷⁹	4- 415	16, ←15,	Ground		36 523.48	
O ¹⁶ C ¹² S ³²	4- 521	3← 2	Excited		36 532.47	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 5, 9←12, 6, 6	Ground		36 540.92	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 5, 9←12, 6, 6	Ground		36 542.27	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 5, 9←12, 6, 6	Ground		36 545.43	.1
C ¹² H ₃ Hg ¹⁹⁹ Br ⁷⁹	4- 413	16, ←15,	Ground		36 547.33	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 5, 8←12, 6, 7	Ground		36 563.90	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 5, 8←12, 6, 7	Ground		36 565.29	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 5, 8←12, 6, 7	Ground		36 568.41	.1
O ¹⁶ C ¹² S ³²	4- 521	3← 2	Excited		36 570.83	
C ¹² H ₃ Hg ¹⁹⁸ Br ⁷⁹	4- 411	16, ←15,	Ground		36 571.55	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported			36 575.	10.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HDO ₂ ¹⁶	3- 43	7, , ← 7, .						36 575.	3.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						36 583.05	1.
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	3, 0, 3← 2, 0, 2	Ground					36 583.44	.10
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					36 585.17	
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						36 585.2	1.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						36 587.57	1.
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	1, 1, 0← 1, 0, 1	Ground					36 592.71	1.0
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					36 597.09	
O ¹⁶ C ¹² S ³²	4- 521	3← 2	Excited					36 600.81	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						36 602.12	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	1, 1, 0← 1, 0, 1	Ground					36 611.22	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						36 613.28	
O ¹⁶ C ¹² S ³²	4- 521	3← 2	Excited					36 615.3	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	1, 1, 0← 1, 0, 1	Ground					36 616.50	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	1, 1, 0← 1, 0, 1	Ground					36 620.92	.1
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	1, 1, 0← 1, 0, 1	Ground					36 624.40	.1
C ¹³ H ₃ C ¹² HO	3- 476	2, 1, 2← 1, 1, 1	Ground					36 628.12	.5
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, . ← 4, .						36 630.	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 6← 8, 6	Ground					36 630.24	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						36 631.	1.
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	2, 1, 1← 1, 1, 0	Ground					36 633.	1.
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 5← 8, 5	Ground					36 634.20	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 4← 8, 4	Ground					36 637.49	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 3← 8, 3	Ground					36 639.90	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 2← 8, 2	Ground					36 641.70	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 1← 8, 1	Ground					36 642.77	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 0← 8, 0	Ground					36 643.08	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	13, 2←12, 3	Ground					36 647.1	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	1, 1, 0← 1, 0, 1	Ground					36 652.77	1.0
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						36 655.	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	1, 1, 0← 1, 0, 1	Ground					36 657.47	1.0
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	13, 2←12, 3	Ground					36 658.7	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	1, 1, 0← 1, 0, 1	Ground					36 660.75	1.0
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					36 663.0	.5
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	1, 1, 0← 1, 0, 1	Ground					36 663.42	1.0
C ¹² H ₃ C ¹² H ₂ C ¹² H ₃	3- 781	1, 1, 1← 0, 0, 0	Ground					36 666.33	.06
C ¹² D ₃ O ¹⁶ D	3- 216	1, 0, 1← 0, 0, 0	Ground					36 673.93	.5
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	11, ←10.	Ground					36 681.9	1.0
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	1, 1, 1← 2, 0, 2	Ground					36 688.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 3← 2, 1, 2	Ground					36 700.24	.1
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	11, ←10.	Excited					36 701.7	1.0
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 1← 8, 1	Excited					36 703.62	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	Not Reported						36 707.00	.1
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, . ← 4, .						36 710.	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 5← 8, 4	Excited					36 710.05	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 4← 8, 4	Excited					36 713.83	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 5← 8, 5	Excited					36 716.90	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 3← 8, 3	Excited					36 716.90	.1
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	13, 2←12, 3	Ground					36 717.4	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 4← 8, 4	Excited					36 719.38	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 2← 8, 2	Excited					36 719.38	.1
C ¹² H ₃ C ¹² HO ¹⁸	3- 479	2, 0, 2← 1, 0, 1	Ground					36 719.90	.4
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 1← 8, 1	Excited					36 721.20	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 3← 8, 3	Excited					36 721.20	1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 2← 8, 2	Excited					36 722.30	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 0← 8, 0	Excited					36 722.30	.1
C ¹² H ₃ C ¹² HO ¹⁸	3- 479	2, 0, 2← 1, 0, 1	Ground					36 725.26	.4
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	13, 2←12, 3	Ground					36 729.0	
C ¹² D ₃ O ¹⁶ D	3- 216	1, 0, 1← 0, 0, 0	Ground					36 730.94	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 3← 2, 1, 2	Ground					36 736.13	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 3← 2, 1, 2	Ground					36 737.03	.1
Cl ₂ O ¹⁶	4-1484	9, 2, 8←10, 1, 9	Ground					36 739.68	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 2← 3, 2, 1	Excited					36 740.	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	9, 1← 8, 1	Excited					36 741.46	.1
Cl ₂ O ¹⁶	4-1484	22, 3, 19←23, 2, 22	Ground					36 746.02	
F ¹⁹ HC ¹² O ¹⁸	4- 274	1, 1, 1← 2, 0, 2	Ground					36 748.3	.2
C ¹² H ₃ F ¹⁹ C ¹² N ¹⁴	4- 701	6, 1, 5← 5, 2, 4	Ground					36 752.8	.2
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						36 753.7	.5
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	4, ← 3,	Ground					36 753.83	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 3← 2, 1, 2	Ground					36 774.08	.1
C ¹² H ₃ C ¹³ N ¹⁴	4- 815	2, 0← 1, 0	Ground		2		1	36 777.18	
C ¹² H ₃ C ¹³ N ¹⁴	4- 815	2, 0← 1, 0	Ground		3		2	36 777.18	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 3← 2, 1, 2	Ground					36 783.14	.1
C ¹² H ₃ O ¹⁸ H	3- 217	14, 2, ←14, 1,	Ground					36 787.33	.1
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 1← 1, 1	Ground		2		1	36 793.64	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 1← 1, 1	Ground		2		2	36 794.26	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 0← 1, 0	Ground		1		0	36 794.26	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 1← 1, 1	Ground		3		2	36 794.88	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 0← 1, 0	Ground		3		2	36 795.38	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 0← 1, 0	Ground		2		1	36 795.38	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 1← 1, 1	Ground		1		0	36 796.27	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 0← 1, 0	Ground		1		1	36 797.52	
a-C ¹² H ₂ DC ¹² HO ¹⁶	3- 481	2, 1, 1← 1, 1, 0	Ground					36 799.	3.
C ¹² D ₃ O ¹⁶ D	3- 216	1, 0, 1← 0, 0, 0	Ground					36 799.01	.5
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	9, ← 8,	Ground					36 809.8	.3
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, , ← 4, ,						36 810.	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					36 815.0	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						36 816.6	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					36 822.40	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					36 824.83	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	13, 2.11←13, 2.12						36 830.	
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, , ← 4, ,						36 830.	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					36 830.0	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					36 831.82	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						36 856.9	.5
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					36 870.	20.
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 1← 1, 1	Excited					36 870.94	
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					36 871.10	
H ₂ C ¹³ :C ¹² HF ¹⁹	4- 782	2, 1, 2← 1, 1, 1	Ground					36 872.34	.05
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	7, 4, 3← 7, 3, 4	Ground					36 874.3	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					36 885.4	
H ₂ C ¹² :C ¹² DF ¹⁹	4- 784	2, 1, 2← 1, 1, 1	Ground					36 895.8	.3
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	3, 2, 2← 2, 2, 1	Ground					36 897.80	.10
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 1← 1, 1	Excited					36 903.40	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 0← 1, 0	Excited					36 903.40	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						36 910.	10.
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	29, 4.25←29, 4.26						36 910.	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					36 941.21	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, 1← 1, 1	Excited					36 942.15	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						36 946.4	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					36 954.07	
F ¹⁹ HC ¹² O ¹⁶	4- 271	5, 0, 5← 4, 1, 4						36 956.0	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					36 957.5	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	2, 2, 0← 1, 1, 0	Ground					36 959.4	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	5, 1, 5← 4, 1, 4	Ground					36 968.20	
a-C ¹² H ₂ DSi ²⁸ H ₂ F ¹⁹	3- 248	3, 1, 2← 2, 1, 1	Ground					36 972.82	.1
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	2, 0, 2← 1, 0, 1	Ground					36 975.	3.
D ₂ N ¹⁵ C ¹² HO ¹⁶	3- 161	2, 0, 2← 1, 0, 1	Ground					36 980.00	
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	2, 0, 2← 1, 0, 1	Ground					36 981.7	.3
HO ¹⁶	1-	11/2, 5←11/2, 5	Ground		5		5	36 983.47	.15
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					36 984.23	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						36 987.	
HO ¹⁶	1-	11/2, 5←11/2, 5	Ground		6		6	36 994.43	.15
t-DHC ¹² :C ¹² DF ¹⁹	4- 791	2, 0, 2← 1, 0, 1	Ground					37 003.9	.3
C ¹² H ₃ C ¹² N ¹⁴	4- 811	2, ← 1,	Excited					37 013.2	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	3, , ← 3,						37 015.4	.5
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 025.7	
Ge ⁷⁴ HCl ₃ ³⁷	4-1496	9, ← 8,	Ground					37 029.43	.07
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						37 030.	
t-HDN ¹⁵ C ¹² HO ¹⁶	3- 159	2, 1, 2← 1, 1, 1	Ground					37 031.65	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 034.4	
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	4, 1, 3← 3, 1, 2	Excited					37 034.77	.15
C ¹² H ₃ C ¹² H ₂ F ¹⁹	3- 551	5, 1, 4← 5, 0, 5	Ground					37 042.99	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported	Ground					37 044.68	.1
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 046.5	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	3, 0, 3← 2, 0, 2	Ground					37 051.64	.2
C ¹² H ₃ C ¹² O ¹⁶ F ¹⁹	3- 391	3, 0, 3← 2, 0, 2	Ground					37 055.85	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					37 061.79	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 069.91	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 073.67	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						37 076.	3.
a-C ¹² H ₂ DSi ^b HD ₂	3- 335	2, 1, 2← 1, 1, 1						37 076.08	
c-HDC ¹² :C ¹² DF ¹⁹	4- 789	2, 1, 1← 1, 1, 0	Ground					37 078.4	.3
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 2← 3, 2, 1	Ground	9/2		7/2		37 079.11	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						37 080.	10.
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 082.2	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 2← 3, 2, 1	Ground	7/2		5/2		37 082.50	
Ge ⁷² HCl ₃ ³⁷	4-1495	9, ← 8,	Ground					37 087.62	.07
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 2← 3, 2, 1	Ground	11/2		9/2		37 089.15	
N ¹⁴ O ₂ Cl ³⁵	4-1461	4, 2, 2← 3, 2, 1	Ground	5/2		3/2		37 092.52	
HDO ₂ ¹⁶	3- 43	6, , ← 6, ,						37 096.	3.
N ¹⁴ O ¹⁶ Br ^b	4- 123	5, , ← 4, ,						37 100.	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 112.05	
S ₂ ³² O ¹⁶	4-1821	4, 1, 4← 3, 1, 3	Excited					37 112.3	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 112.32	
P ³¹ O ¹⁶ F ₂ Cl ³⁷	4-1392	30,10,20←30, 9,21	Ground					37 123.80	
HC ¹² :C ¹² C ¹² H:C ¹² H ₂	4-1131	4, 1, 3← 3, 1, 2	Ground					37 123.87	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	2, 1, 1← 2, 0, 2	Ground					37 129.14	1.0
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 129.86	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 129.98	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	2, 1, 1← 2, 0, 2	Ground					37 132.67	1.0
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	2, 1, 1← 2, 0, 2	Ground					37 136.25	1.0
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	2, 1, 1← 2, 0, 2	Ground					37 140.00	1.0
P ³¹ O ¹⁶ F ₂ Cl ³⁷	4-1392	29,10,19←29, 9,20	Ground					37 141.78	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	2, 1, 1← 2, 0, 2	Ground					37 146.66	1.0
Ge ⁷⁰ HCl ₃ ³⁷	4-1494	9, ← 8,	Ground					37 147.40	.07
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						37 148.	10.
S ₂ ³² O ¹⁶	4-1821	4, 1, 4← 3, 1, 3	Ground					37 149.0	
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	2, 1, 1← 2, 0, 2	Ground					37 149.50	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1126	10, 6← 9, 6	Ground					37 152.26	.2
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	2, 1, 1← 2, 0, 2	Ground					37 153.50	1.0
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3← 6, 1, 5	Ground					37 153.7	.05
D ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1126	10, 5← 9, 5	Ground					37 155.40	.2
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Ground					37 156.07	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1126	10, 4← 9, 4	Ground					37 158.03	.2
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	2, 1, 1← 2, 0, 2	Ground					37 158.82	1.0
P ³¹ O ¹⁶ F ₂ Cl ³⁷	4-1392	28,10,18←28, 9,19	Ground					37 158.88	
D ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1126	10, 3← 9, 3	Ground					37 160.12	.2
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 161.16	
D ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1126	10, 2← 9, 2	Ground					37 161.55	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F' ₁	F'	F ₁	F		
D ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1126	10, 1← 9, 1	Ground					37 162.40	.2
D ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1126	10, 0←11, 0	Ground					37 162.66	.2
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	9, 7← 8, 7	Ground					37 165.6	
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	2, 1, 1← 2, 0, 2	Ground					37 166.20	1.0
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3← 6, 1, 5	Ground					37 166.7	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14←16, 4,13	Ground	31/2		29/2		37 167.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					37 167.6	
HDC ¹² :C ¹² O ¹⁶	4- 713	2, 1, 2← 1, 1, 1	Ground					37 169.75	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	9, 6← 8, 6	Ground					37 170.29	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	9, 5← 8, 5	Ground					37 174.24	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	9, 4← 8, 4	Ground					37 177.31	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	27,10,17←27, 9,18	Ground					37 177.86	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	9, 3← 8, 3	Ground					37 179.80	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3← 6, 1, 5	Ground					37 181.1	.05
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	9, 2← 8, 2	Ground					37 181.60	
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14←16, 4,13	Ground	33/2		31/2		37 182.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					37 182.2	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	9, 1← 8, 1	Ground					37 182.67	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	9, 0← 8, 0	Ground					37 182.96	
O ¹⁶ F ₂ ¹⁹	4-1611	28, 7,21←29, 6,24	Ground					37 184.65	.10
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	26,10,16←26, 9,17	Ground					37 191.23	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3← 6, 1, 5	Ground					37 192.2	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					37 193.1	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3← 6, 1, 5	Ground					37 195.3	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14←16, 4,13	Ground	35/2		33/2		37 196.1	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					37 196.1	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	25,10,15←25, 9,16	Ground					37 204.66	
C ¹² H ₃ Si ²⁸ F ₃ ¹⁹	3- 131	5, ← 4,	Excited					37 205.16	
S ³² P ³¹ F ₃ ¹⁹	4-1691	7, 6← 6, 6	Ground					37 205.84	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	7, 5← 6, 5	Ground					37 206.13	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	7, 4← 6, 4	Ground					37 206.36	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	7, 3← 6, 3	Ground					37 206.55	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	7, 2← 6, 2	Ground					37 206.67	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	7, 1← 6, 1	Ground					37 206.77	.05
S ³² P ³¹ F ₃ ¹⁹	4-1691	7, 0← 6, 0	Ground					37 206.77	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3← 6, 1, 5	Ground					37 207.9	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14←16, 4,13	Ground	37/2		35/2		37 208.8	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					37 208.8	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					37 210.3	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					37 210.6	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	17, ←16,	Excited					37 210.6	.4
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	3, 2, 1← 2, 2, 0	Ground					37 210.60	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					37 215.17	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	24,10,14←24, 9,15	Ground					37 215.60	
HDC ¹² :C ¹² O ¹⁶	4- 713	2, 1, 2← 1, 1, 1	Excited					37 215.86	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					37 220.42	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3 $\leftarrow$ 6, 1, 5	Ground					37 220.5	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3 $\leftarrow$ 6, 1, 5	Ground					37 221.5	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground					37 221.8	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	23,10,13 $\leftarrow$ 23, 9,14	Ground	49/2		49/2		37 225.28	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	23,10,13 $\leftarrow$ 23, 9,14	Ground	43/2		43/2		37 225.28	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	23,10,13 $\leftarrow$ 23, 9,14	Ground	47/2		47/2		37 226.46	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	23,10,13 $\leftarrow$ 23, 9,14	Ground	45/2		45/2		37 226.46	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	17, $\leftarrow$ 16,	Excited					37 227.4	.4
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3 $\leftarrow$ 6, 1, 5	Ground					37 229.5	.05
C ¹² D ₃ O ¹⁶ H	3- 214	2, , $\leftarrow$ 1, ,	Ground					37 229.8	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						37 229.8	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						37 230.	10.
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground					37 230.0	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	17, $\leftarrow$ 16,	Excited					37 234.7	.4
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	7, 4, 3 $\leftarrow$ 7, 3, 4	Ground					37 234.8	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14 $\leftarrow$ 16, 4,13	Ground					37 235.6	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	22,10,12 $\leftarrow$ 22, 9,13	Ground	41/2		41/2		37 235.84	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	22,10,12 $\leftarrow$ 22, 9,13	Ground	47/2		47/2		37 235.84	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	22,10,12 $\leftarrow$ 22, 9,13	Ground	43/2		43/2		37 237.16	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	22,10,12 $\leftarrow$ 22, 9,13	Ground	45/2		45/2		37 237.16	
HDC ¹² :C ¹² O ¹⁶	4- 713	2, 1, 2 $\leftarrow$ 1, 1, 1	Excited					37 240.17	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	20,10,10 $\leftarrow$ 20, 9,11	Ground	37/2		37/2		37 251.74	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	20,10,10 $\leftarrow$ 20, 9,11	Ground	43/2		43/2		37 251.74	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3 $\leftarrow$ 6, 1, 5	Ground					37 253.4	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	20,10,10 $\leftarrow$ 20, 9,11	Ground	39/2		39/2		37 253.48	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	20,10,10 $\leftarrow$ 20, 9,11	Ground	41/2		41/2		37 253.48	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground					37 253.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14 $\leftarrow$ 16, 4,13	Ground	37/2		35/2		37 253.6	
HDC ¹² :C ¹² O ¹⁶	4- 713	2, 1, 2 $\leftarrow$ 1, 1, 1	Excited					37 254.26	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					37 254.66	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	17, $\leftarrow$ 16,	Excited					37 256.4	.4
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	19,10, 9 $\leftarrow$ 19, 9,10	Ground	35/2		35/2		37 259.94	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	19,10, 9 $\leftarrow$ 19, 9,10	Ground	41/2		41/2		37 259.94	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	19,10, 9 $\leftarrow$ 19, 9,10	Ground	37/2		37/2		37 261.64	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	19,10, 9 $\leftarrow$ 19, 9,10	Ground	39/2		39/2		37 261.64	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	2, 1, 2 $\leftarrow$ 1, 0, 1	Ground					37 263.80	.20
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	18,10, 8 $\leftarrow$ 18, 9, 9	Ground	33/2		33/2		37 264.82	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	18,10, 8 $\leftarrow$ 18, 9, 9	Ground	39/2		39/2		37 264.82	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3 $\leftarrow$ 6, 1, 5	Ground					37 267.0	.05
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	18,10, 8 $\leftarrow$ 18, 9, 9	Ground	37/2		37/2		37 267.50	
P ³¹ O ¹⁶ F ₂ ¹⁹ Cl ³⁷	4-1392	18,10, 8 $\leftarrow$ 18, 9, 9	Ground	35/2		35/2		37 267.50	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4 $\leftarrow$ 3, 1, 3	Ground					37 268.0	
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14 $\leftarrow$ 16, 4,13	Ground	35/2		33/2		37 268.0	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	17, $\leftarrow$ 16,	Ground					37 278.0	.3

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3← 6, 1, 5	Ground					37 278.4	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14←16, 4,13	Ground	33/2		31/2		37 279.3	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					37 279.3	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 2, 3← 6, 1, 5	Ground					37 288.4	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	17, 3,14←16, 4,13	Ground	31/2		29/2		37 289.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	4, 0, 4← 3, 1, 3	Ground					37 289.2	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						37 291.0	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	17, ←16,	Excited					37 305.3	.4
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 3, 1, 3	Ground					37 305.41	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 3, 1, 3	Ground					37 306.66	.1
HDO ₂ ¹⁶	3- 43	12, , ←12, ,						37 313.	3.
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						37 320.9	.5
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	2, 0, 2← 1, 0, 1	Ground					37 322.20	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						37 322.8	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					37 322.8	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						37 325.	
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	2, 0, 2← 1, 0, 1	Ground					37 326.98	.2
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	7, 5, 2← 7, 4, 3	Ground					37 329.	1.
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	17, ←16,	Excited					37 331.7	.4
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 3, 1, 3	Ground					37 333.28	.1
O ^b O ^b O ^b	4-1847	Not Reported						37 341.	
(C ¹² H ₃) ₃ Si ²⁸ I ¹²⁷	3- 841	17, ←16,	Excited					37 342.7	.4
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	19, 2,17←20, 1,20	Ground					37 347.	
Si ²⁸ D ₂ F ₂ ¹⁹	4-1603	2, 1, 2← 1, 0, 1	Excited					37 353.90	.20
C ¹² H ₃ Hg ²⁰⁴ Cl ³⁵	4- 449	9, ← 8,	Ground					37 360.62	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	26,12, ←25,13,	Ground					37 361.64	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	26,12, ←25,13,	Ground					37 362.45	.1
F ¹⁹ DC ¹² O ¹⁶	4- 272	4, 0, 4← 3, 1, 3						37 370.8	.1
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	2, 1, 2← 1, 1, 1	Ground					37 370.9	.2
C ¹² H ₃ Hg ²⁰² Cl ³⁵	4- 447	9, ← 8,	Ground					37 371.60	
HDN ¹⁴ C ¹² N ¹⁴	4- 362	2, 1, 2← 1, 1, 1	Ground					37 375.4	.5
C ¹² H ₃ Hg ²⁰⁰ Cl ³⁵	4- 445	9, ← 8,	Ground					37 382.80	
HDN ¹⁴ C ¹² N ¹⁴	4- 362	2, 1, 2← 1, 1, 1	Excited					37 384.7	.5
N ¹⁴ H ₃	4-1771	15,15←15,15	Ground					37 385.18	.10
C ¹² D ₃ N ¹⁴ H ₂	3- 263	4, , ← 4, ,						37 386.3	.5
C ¹² H ₃ Hg ¹⁹⁹ Cl ³⁵	4- 443	9, ← 8,	Ground					37 388.40	
t-DHC ¹² :C ¹² HF ¹⁹	4- 788	2, 1, 1← 1, 1, 0	Ground					37 388.6	.3
C ¹³ H ₃ C ¹² HO	3- 476	2, 0, 2← 1, 0, 1	Ground					37 391.12	.2
C ¹² H ₃ Hg ¹⁹⁸ Cl ³⁵	4- 441	9, ← 8,	Ground					37 394.00	
C ¹³ H ₃ C ¹² HO	3- 476	2, 0, 2← 1, 0, 1	Ground					37 396.36	.2
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	8, 1, 7← 8, 1, 8	Ground					37 397.40	.4
S ₂ ³² O ¹⁶	4-1821	1, 1, 0← 1, 0, 1	Ground					37 407.2	
C ¹² D ₃ C ¹² DO ¹⁶	3- 472	8, 1, 7← 8, 1, 8	Ground					37 409.18	.3
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						37 410.	10.
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	3, 1, 3← 2, 1, 2	Ground					37 417.	1.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F'	F ₁	F		
C ¹² H ₃ O ¹⁸ H	3- 217	15, 2, ←15, 1,	Ground					37 418.97	.1
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						37 425.	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	6, , ← 6, ,						37 427.1	.5
C ¹² HBr ₃ ⁷⁹	4- 241	15, ←14,	Ground					37 427.8	.5
C ¹² H ₃ S ³² H	3- 221	Not Reported	Ground					37 437.33	
C ¹² H ₃ C ¹² HF ₂ ¹⁹	3- 461	2, 2, 1← 1, 1, 1	Ground					37 438.4	.1
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	3, 2, 2← 2, 1, 1	Ground					37 438.80	.04
s-C ¹² H ₂ DS ¹⁶ HD ₂	3- 334	2, 1, 2← 1, 1, 1						37 439.40	
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	3, 2, 2← 2, 1, 1	Ground					37 443.15	.04
(C ¹² D ₃) ₂ C ¹² O ¹⁶	3- 752	3, 2, 2← 2, 2, 1	Ground					37 447.95	.04
H ₂ C ¹² :C ¹² F ₂ ¹⁹	4- 681	3, 0, 3← 2, 0, 2	Ground					37 461.	1.
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					37 462.6	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						37 462.6	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 1, 2← 1, 1, 1	Ground					37 464.58	.3
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 0, ← 2, 0,	Ground					37 465.3	.2
C ¹³ H ₃ Si ²⁸ H ₂ F ¹⁹	3- 249	3, 1, 2← 2, 1, 1	Ground					37 479.80	.10
(C ¹² H ₃) ₃ C ¹² I ¹²⁷	3- 991	12, ←11,	Ground					37 490.	30.
C ¹² *DHC ¹² H:C ¹² *H	4-1034	3, 1, 2← 3, 1, 3	Ground					37 508.9	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 1, 2← 1, 1, 1	Ground					37 515.24	.3
H ₂ O ₂ ¹⁶	3- 41	Not Reported						37 517.6	.2
HDO ₂ ¹⁶	3- 43	5, , ← 5, ,						37 526.	3.
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	4, 1, 3← 4, 0, 4	Ground					37 527.60	.5
a-C ¹² H ₂ DS ¹⁶ HD ₂	3- 335	2, 0, 2← 1, 0, 1						37 533.0	
C ¹² HCl ₃ ³⁷	4- 263	6, ← 5,	Ground					37 554.11	.40
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	5, 0, 5← 4, 0, 4	Ground					37 554.80	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					37 564.	
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	2, 1, 2← 1, 1, 1	Ground					37 574.6	1.
C ¹² H ₃ O ¹⁸ H	3- 217	24, 2, ←24, 1,	Ground					37 579.85	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	5, 3, 2← 4, 3, 1	Ground					37 580.50	
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	5, 3, 3← 4, 3, 2	Ground					37 580.50	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						37 582.	3.
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	5, 2, 3← 4, 2, 2	Ground					37 590.00	.1
C ¹² H ₃ C ¹² H:C ¹² HF ¹⁹	3- 711	5, 2, 3← 4, 2, 2	Ground					37 595.6	
O ¹⁶ O ¹⁶ O ¹⁶	4-1847	Not Reported						37 608.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					37 610.25	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					37 617.40	.1
s-C ¹² H ₂ DS ¹⁶ HD ₂	3- 334	2, 0, 2← 1, 0, 1						37 618.28	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					37 622.16	
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	4, 1, 3← 4, 0, 4	Ground					37 626.28	.3
HDC ¹² :C ¹² O ¹⁶	4- 713	2, 0, 2← 1, 0, 1	Ground					37 642.41	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	4, 3, 2← 4, 2, 3	Ground					37 647.41	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 0, 2	Ground					37 651.04	.1
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	3, 3, 1← 3, 2, 2	Ground					37 657.0	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					37 658.65	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					37 659.84	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 660.53	.1
HDC ¹² ;C ¹² O ¹⁶	4- 713	2, 0, 2← 1, 0, 1	Excited		37 664.81	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 0, 2	Ground		37 666.36	.1
(C ¹² H ₃) ₃ Si ²⁸ B ⁸¹	3- 812	13, ←12,	Ground		37 675.3	.4
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 1, 2← 1, 1, 1	Ground		37 687.18	.4
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported			37 690.	
HDC ¹² ;C ¹² O ¹⁶	4- 713	2, 0, 2← 1, 0, 1	Excited		37 693.05	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 698.01	.1
C ¹² H ₃ O ¹⁶ H	3- 211	8, 2, ← 7, 1,	Ground		37 703.72	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported	Ground		37 708.80	.3
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 0, 2	Ground		37 710.31	.1
HDN ¹⁴ C ¹² N ¹⁴	4- 362	2, 0, 2← 1, 0, 1	Ground		37 723.8	.5
HDN ¹⁴ C ¹² N ¹⁴	4- 362	2, 0, 2← 1, 0, 1	Excited		37 723.8	.5
C ¹² H ₃ C ¹² HO ¹⁸	3- 479	2, 1, 1← 1, 1, 0	Ground		37 724.4	1.
c-HDC ¹² ;C ¹² HF ¹⁹	4- 787	2, 0, 2← 1, 0, 1	Ground		37 729.8	.3
HDC ¹² ;C ¹² O ¹⁶	4- 713	2, 0, 2← 1, 0, 1	Excited		37 754.59	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 0, 3← 2, 0, 2	Ground		37 764.55	.1
H ₂ N ¹⁴ C ¹² DO ¹⁶	3- 155	7, 1, 6← 6, 2, 5	Ground		37 765.17	
O ¹⁶ O ¹⁶ O ¹⁶	4-1847	Not Reported			37 768.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 769.29	.1
C ¹² H ₂ DN ¹⁴ C ¹²	4- 838	2, 1, 2← 1, 1, 1	Ground		37 770.79	.1
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	2, 0, 2← 1, 0, 1	Ground		37 775.20	.2
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	5, 3, 2← 5, 2, 3	Ground		37 781.	1.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 782.96	.1
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	4, 3, 2← 3, 3, 1	Ground		37 788.10	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 791.71	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 2, 2, 1	Ground		37 796.16	.1
s-C ¹² H ₂ DS ¹⁶ HD ₂	3- 334	2, 1, 1← 1, 1, 0			37 798.60	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 799.76	.1
(C ¹² H ₃) ₂ S ³²	3- 601	8, 2, 7← 7, 3, 4	Ground		37 805.82	.05
(C ¹² H ₃) ₂ S ³²	3- 601	8, 2, 7← 7, 3, 4	Ground		37 807.71	.05
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported			37 807.9	.5
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported			37 812.2	.5
O ₃ ¹⁶	4-1841	18, 2,16←17, 3,15	Ground		37 832.	
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported			37 840.5	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 841.92	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 2, 2, 1	Ground		37 844.07	.1
(C ¹² H ₃) ₂ S ³²	3- 601	8, 2, 7← 7, 3, 4	Ground		37 846.77	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 2, 2, 1	Ground		37 853.03	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		37 854.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 1← 2, 2, 0	Ground		37 855.93	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 2, 2, 1	Ground		37 869.28	.1
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	2, 1, 2← 1, 1, 1	Ground		37 870.72	.2
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 870.87	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground		37 879.45	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F'	F ₁	F		
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	5, 4, 1← 5, 3, 2	Ground					37 879.9	.2
H ₂ C ¹² :C ¹³ HF ¹⁹	4- 783	2, 1, 2← 1, 1, 1	Ground					37 883.28	.05
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					37 890.	20.
C ¹² *H ₂ C ¹² D:C ¹² *D	4-1033	5, 3, 2← 5, 3, 3	Ground					37 894.2	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						37 900.	
C ¹² H ₃ Si ²⁸ Cl ³⁵ Cl ³⁷	3- 114	11, , ←10, ,	Ground					37 900.	20.
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					37 900.0	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 2← 2, 2, 1	Ground					37 900.09	.1
Ge ⁷⁴ F ₃ ¹⁹ Cl ³⁷	4-1406	9, ← 8,	Ground					37 905.91	.30
C ^b H ₂ Cl ^b FF ^b	4- 333	Not Reported						37 914.	.1
C ¹² H ₂ Cl ³⁷ F ¹⁹	4- 332	3, 1, 2← 3, 0, 3	Ground					37 924.77	1.0
Ge ⁷² F ₃ ¹⁹ Cl ³⁷	4-1404	9, ← 8,	Ground					37 925.87	.90
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 1← 2, 2, 0	Ground					37 926.73	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	5, 5, 1← 5, 4, 2	Ground					37 930.	10.
C ^b H ₂ Cl ^b FF ^b	4- 333	Not Reported						37 930.0	1.
C ^b H ₂ Cl ^b FF ^b	4- 333	Not Reported						37 938.	1.
C ¹² H ₂ Cl ³⁵ F ¹⁹	4- 331	3, 1, 2← 3, 0, 3	Ground					37 940.52	1.0
C ¹² H ₃ Si ²⁸ HDF ¹⁹	3- 252	3, 1, 2← 2, 1, 1	Ground					37 943.80	.10
Ge ⁷⁰ F ₃ ¹⁹ Cl ³⁷	4-1402	9, ← 8,	Ground					37 945.47	.90
C ^b H ₂ Cl ^b FF ^b	4- 333	Not Reported						37 950.	1.
C ¹² D ₃ N ¹⁴ H ₂	3- 263	3, , ← 3, ,						37 951.4	.5
C ¹² H ₂ DN ¹⁴ C ¹²	4- 838	2, 0, 2← 1, 0, 1	Ground					37 951.67	.1
C ^b H ₂ Cl ^b FF ^b	4- 333	Not Reported						37 952.	1.
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	2, 1, 2← 1, 1, 1	Excited					37 952.07	.05
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					37 953.44	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 1← 2, 2, 0	Ground					37 954.79	.1
HC ¹² :C ¹² C ¹² HO ¹⁶	4- 911	4, 1, 3← 3, 1, 2	Ground					37 954.95	.10
C ¹² H ₃ C ¹² Cl ³⁵	3- 381	8, ← 7,	Ground					37 955.88	.40
C ^b H ₂ Cl ^b FF ^b	4- 333	Not Reported						37 957.	1.
C ^b H ₂ Cl ^b FF ^b	4- 333	Not Reported						37 962.76	1.
S ₂ O ¹⁶	4-1821	2, 1, 1← 2, 0, 2	Ground					37 965.3	
O ^b O ^b O ^b	4-1847	Not Reported						37 970.	
O ¹⁶ O ¹⁶ O ¹⁸	4-1842	20, 2,18←21, 1,20	Ground					37 979.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 2, 1← 2, 2, 0	Ground					37 979.00	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					37 985.33	.1
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	2, 1, 2← 1, 1, 1	Ground					37 991.28	.05
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	11, 9, 2←11, 8, 3	Ground					38 000.	10.
a-C ¹² H ₂ DSi ^b HD ₂	3- 335	2, 1, 1← 1, 1, 0						38 001.08	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					38 003.6	
C ¹² H ₃ Br ⁸¹	4- 402	2, 1← 1, 1	Ground			1/2	1/2	38 006.47	.08
(C ¹² H ₃) ₃ Si ²⁸ Br ⁷⁹	3- 811	13, ←12,	Ground					38 010.8	.3
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 1← 1, 0, 1	Ground					38 021.11	.1
C ¹² D ₃ N ¹⁴ H ₂	3- 263	Not Reported						38 023.7	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	2, 1, 1← 1, 0, 1	Ground					38 026.70	.1
C ¹² H ₃ Br ⁸¹	4- 402	2, 0← 1, 0	Ground			3/2	3/2	38 030.77	.08

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F ₁	F ₁	F		
C ¹² H ₃ C ¹² ₃ HO ¹⁶ C ¹² ₃ H ₂	3- 761	3, 2, 1← 2, 2, 0	Ground					38 036.22	.1
C ¹² D ₂ Cl ³⁵ Cl ³⁷	4- 347	3, 1, 3← 2, 0, 2	Ground					38 043.	2.
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					38 052.6	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						38 052.6	
C ¹² H ₃ O ¹⁸ H	3- 217	16, 2, ←16, 1,	Ground					38 053.87	.1
O ₃ ¹⁸	4-1845	1, 1, 1← 2, 0, 2	Ground					38 054.	
HDN ¹⁴ C ¹² N ¹⁴	4- 362	2, 1, 1← 1, 1, 0	Excited					38 056.8	.5
C ¹² H ₃ Br ⁸¹	4- 402	2, 1← 1, 1	Ground	3/2		1/2		38 066.72	.08
HDN ¹⁴ C ¹² N ¹⁴	4- 362	2, 1, 1← 1, 1, 0	Ground					38 069.1	.5
C ¹² H ₃ C ¹² ₃ HO ¹⁶ C ¹² ₃ H ₂	3- 761	2, 1, 1← 1, 0, 1	Ground					38 070.06	.1
O ¹⁶ O ¹⁶ O ¹⁶	4-1847	Not Reported						38 086.	
c-HDN ¹⁵ C ¹² HO ¹⁶	3- 158	2, 1, 2← 1, 1, 1	Ground					38 096.52	
C ¹² H ₃ Br ⁸¹	4- 402	2, 1← 1, 1	Ground	7/2		5/2		38 097.45	.08
Li ⁶ Br ⁸¹	1-	1← 0	Ground	5/2		3/2		38 112.72	0.10
HDC ¹² ;C ¹² O ¹⁶	4- 713	2, 1, 1← 1, 1, 0	Excited					38 113.22	
HDC ¹² ;C ¹² O ¹⁶	4- 713	2, 1, 1← 1, 1, 0	Ground					38 114.40	
C ¹² H ₃ Br ⁸¹	4- 402	2, 0← 1, 0	Ground	7/2		5/2		38 116.65	.08
C ¹² H ₃ Br ⁸¹	4- 402	2, 0← 1, 0	Ground	5/2		3/2		38 116.65	.08
C ¹² H ₃ Br ⁸¹	4- 402	2, 0← 1, 0	Ground	1/2		1/2		38 126.97	.08
C ¹² H ₃ Br ⁷⁹	4- 401	2, 1← 1, 1	Ground	1/2		1/2		38 128.40	.08
C ¹² H ₂ DN ¹⁴ C ¹²	4- 838	2, 1, 1← 1, 1, 0	Ground					38 131.57	.1
D ₂ O ₂ ¹⁶	3- 42	Not Reported						38 132.	3.
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						38 132.8	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					38 132.8	.5
HC ¹² ;C ¹² C ¹² HO ¹⁶	4- 911	4, 1, 3← 3, 1, 2	Excited					38 144.42	.15
HDC ¹² ;C ¹² O ¹⁶	4- 713	2, 1, 1← 1, 1, 0	Excited					38 144.71	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	8, 1, 7← 8, 1, 8	Ground					38 151.3	.4
C ¹² H ₃ Br ⁷⁹	4- 401	2, 0← 1, 0	Ground	3/2		3/2		38 157.30	.08
C ¹² H ₃ Br ⁸¹	4- 402	2, 1← 1, 1	Ground	5/2		5/2		38 157.70	.08
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	2, 1, 1← 1, 1, 0	Ground					38 164.5	.4
Cl ₂ O ¹⁶	4-1484	10, 0, 10← 9, 1, 9	Ground					38 165.30	
C ¹² H ₃ Br ⁸¹	4- 402	Not Reported	Ground	3/2		3/2		38 175.08	.08
Si ²⁸ HCF ³⁵ Cl ³⁷	4-1503	8, , ← 7, ,	Ground					38 180.	10.
S ₂ O ¹⁶	4-1821	4, 0, 4← 3, 0, 3	Excited					38 180.0	
C ¹³ H ₃ C ¹² HO	3- 476	2, 1, 1← 1, 1, 0	Ground					38 186.94	.3
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	2, 1, 1← 1, 1, 0	Ground					38 187.2	.5
C ^b H ₂ CP ^b F ^b	4- 333	Not Reported						38 198.	1.
C ^b H ₂ CP ^b F ^b	4- 333	Not Reported						38 199.27	1.
C ¹² H ₃ Br ⁷⁹	4- 401	2, 1← 1, 1	Ground	3/2		1/2		38 200.52	.08
S ₂ O ¹⁶	4-1821	4, 0, 4← 3, 0, 3	Ground					38 203.0	
C ¹² H ₃ Br ⁸¹	4- 402	Not Reported	Ground	5/2		3/2		38 218.21	.08
s-C ¹² H ₂ DC ¹² HO ¹⁶	3- 473	2, 1, 1← 1, 1, 0	Ground					38 231.25	.5
C ¹² H ₃ Br ⁷⁹	4- 401	2, 1← 1, 1	Ground	7/2		5/2		38 237.14	.08
C ¹² H ₃ Br ⁸¹	4- 402	2, 0← 1, 0	Ground	5/2		5/2		38 237.14	.08
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	8, 1, 7← 8, 1, 8	Ground					38 241.2	.3

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ Br ⁸¹	4- 402	2, 0← 1, 0	Ground	3/2	1/2			38 247.77	.08
HDC ¹² :C ¹² O ¹⁶	4- 713	2, 1, 1← 1, 1, 0	Excited					38 254.38	
C ¹² H ₃ Br ⁷⁹	4- 401	2, 0← 1, 0	Ground	5/2	3/2			38 260.10	.08
C ¹² H ₃ Br ⁷⁹	4- 401	2, 0← 1, 0	Ground	7/2	5/2			38 260.10	.08
S ₂ O ¹⁶	4-1821	4, 2, 3← 3, 2, 2	Ground					38 260.9	
O ^b O ^b O ^b	4-1847	Not Reported						38 270.	
C ¹² H ₃ Br ⁷⁹	4- 401	2, 0← 1, 0	Ground	1/2	1/2			38 272.40	.08
S ₂ O ¹⁶	4-1821	4, 3, 1← 3, 3, 0	Ground					38 279.1	
S ₂ O ¹⁶	4-1821	4, 3, 2← 3, 3, 1	Ground					38 279.1	
H ₂ C ¹³ :C ¹² HF ¹⁹	4- 782	2, 0, 2← 1, 0, 1	Ground					38 279.95	.05
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						38 290.	
C ¹² H ₃ O ¹⁶ H	3- 211	6, 2, ← 5, 3,	Ground					38 293.5	.1
t-HDN ¹⁵ C ¹² HO ¹⁶	3- 159	2, 0, 2← 1, 0, 1	Ground					38 298.26	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						38 304.	3.
C ¹² H ₃ Br ⁷⁹	4- 401	2, 1← 1, 1	Ground	5/2	5/2			38 309.45	.08
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	39,19, ←38,20,	Ground					38 312.52	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	39,19, ←38,20,	Ground					38 313.08	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	39,19, ←38,20,	Ground					38 313.23	.1
S ₂ O ¹⁶	4-1821	4, 2, 2← 3, 2, 1	Ground					38 322.3	
N ¹⁴ D ₂ H	4-1774	5, 2, 4← 5, 1, 4	Ground					38 326.84	.10
C ¹² H ₃ Br ⁷⁹	4- 401	2, 1← 1, 1	Ground	3/2	3/2			38 330.25	.08
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						38 335.	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						38 339.24	
O ^b O ^b O ^b	4-1847	Not Reported						38 376.	
C ¹³ H ₃ C ¹³ HO ¹⁶	3- 478	2, 1, 1← 1, 1, 0	Ground					38 378.82	.2
C ¹² H ₃ Br ⁷⁹	4- 401	2, 1← 1, 1	Ground	5/2	3/2			38 381.70	.08
C ¹² H ₃ Si ²⁸ CE ₂ ³⁵ CF ³⁷	3- 113	11, ←10, ,						38 400.	10.
C ¹² H ₃ Br ⁷⁹	4- 401	2, 0← 1, 0	Ground	5/2	5/2			38 404.49	.08
O ¹⁶ F ₂ ¹⁹	4-1611	14, 4,10←15, 3,13	Ground					38 408.88	.10
C ¹² H ₃ Br ⁷⁹	4- 401	2, 0← 1, 0	Ground	3/2	1/2			38 417.09	.08
C ¹³ H ₃ C ¹² HO	3- 476	2, 1, 1← 1, 1, 0	Ground					38 420.36	.1
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						38 423.18	1.
D ₂ N ¹⁵ C ¹² HO ¹⁶	3- 161	2, 1, 1← 1, 1, 0	Ground					38 434.56	
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	2, 0, 2← 1, 0, 1	Ground					38 439.56	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						38 445.	
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	2, 0, 2← 1, 0, 1	Ground					38 445.38	.2
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	5, 1, 4← 4, 1, 3	Excited	13/2	11/2			38 448.8	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	5, 1, 4← 4, 1, 3	Excited					38 452.19	
C ¹² H ₃ O ¹⁶ H	3- 211	6, 2, ← 5, 3,	Ground					38 452.69	.1
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	5, 1, 4← 4, 1, 3	Excited	7/2	5/2			38 452.8	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	5, 1, 4← 4, 1, 3	Excited	9/2	7/2			38 457.4	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	5, 1, 4← 4, 1, 3	Ground	13/2	11/2			38 480.3	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	5, 1, 4← 4, 1, 3	Ground	7/2	5/2			38 484.4	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	5, 1, 4← 4, 1, 3	Ground					38 484.56	
t-C ¹² HD:C ¹² DBr ⁸¹	4- 747	5, 1, 4← 4, 1, 3	Ground	9/2	7/2			38 490.8	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² HD:C ¹² DBr ^b	4- 749	Not Reported	Ground					38 492.2	.2
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	9, 8, 1← 9, 7, 2	Ground					38 500.	10.
C ¹² D ₂ Cl ₂ ³⁵	4- 346	3, 1, 3← 2, 0, 2	Ground					38 502.	2.
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 0, 2← 1, 0, 1	Ground					38 506.4	.4
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 0, 2← 1, 0, 1	Ground					38 512.3	.3
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 0, 2← 1, 0, 1	Ground					38 522.86	.3
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						38 530.	
S ₂ ³² O ¹⁶	4-1821	2, 1, 1← 2, 0, 2	Excited					38 542.7	
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 3← 5, 3	Ground	13/2		11/2		38 547.50	.1
C ¹² H ₃ O ¹⁸ H	3- 217	23, 2, ←23, 1,	Ground					38 547.73	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 548.2	.2
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 553.4	.2
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 3← 5, 3	Ground	11/2		9/2		38 561.14	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 3← 5, 3	Ground	15/2		13/2		38 561.14	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 562.6	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	2, 2, 1← 1, 1, 0	Excited					38 565.8	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 2← 5, 2	Ground	13/2		11/2		38 567.79	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 0← 5, 0	Ground	9/2		7/2		38 567.79	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 2← 5, 2	Ground	11/2		9/2		38 567.79	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 0← 5, 0	Ground	11/2		9/2		38 572.70	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 0← 5, 0	Ground	7/2		5/2		38 575.61	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	5, 2, 3← 4, 2, 2	Ground	7/2		5/2		38 576.4	
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 2← 5, 2	Ground	15/2		13/2		38 579.11	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 2← 5, 2	Ground	9/2		7/2		38 579.11	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	5, 2, 3← 4, 2, 2	Ground	13/2		11/2		38 579.4	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	2, 2, 1← 1, 1, 0	Excited					38 579.7	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 1← 5, 1	Ground	13/2		11/2		38 580.18	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 1← 5, 1	Ground	7/2		5/2		38 581.91	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 583.2	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 0← 5, 0	Ground	13/2		11/2		38 584.21	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 585.5	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	5, 2, 3← 4, 2, 2	Ground					38 589.30	.07
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 1← 5, 1	Ground	15/2		13/2		38 590.02	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 0← 5, 0	Ground	17/2		15/2		38 590.02	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 1← 5, 1	Ground	17/2		15/2		38 592.81	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 3← 5, 3	Ground	9/2		7/2		38 592.81	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 0← 5, 0	Ground	15/2		13/2		38 593.85	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 594.6	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	5, 2, 3← 4, 2, 2	Ground	9/2		7/2		38 599.3	
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 2← 5, 2	Ground	17/2		15/2		38 601.31	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 2← 5, 2	Ground	7/2		5/2		38 601.31	.1
c-C ¹² HD:C ¹² HBr ⁷⁹	4- 739	5, 2, 3← 4, 2, 2	Ground	11/2		9/2		38 602.5	
s-C ¹² H ₂ DSi ^b H ₂ D	3- 332	2, 1, 2← 1, 1, 1						38 605.44	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	9, ← 8,	Excited					38 607.26	.5
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 608.6	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ F ₃ ¹⁹ Cl ³⁷	4-1412	8, ← 7,	Ground					38 608.96	.1
Si ²⁸ H ₃ I ¹²⁷	4-1761	6, 3← 5, 3	Ground		17/2		15/2	38 615.65	.1
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 620.3	.1
HDS ^{e80}	4-1757	10, 5, 6←10, 5, 5	Ground					38 629.0	
H ₂ N ¹⁵ C ¹² DO ¹⁶	3- 157	2, 1, 2← 1, 1, 1	Ground					38 632.02	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground					38 635.78	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	9, ← 8,	Excited					38 636.09	.5
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	Not Reported	Ground					38 638.	.5
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 640.0	.1
C ¹² H ₃ O ¹⁸ H	3- 217	17, 2, ←17, 1,	Ground					38 647.87	.1
P ³¹ O ¹⁶ Cl ₃ ³⁷	4-1512	10, ← 9,	Ground					38 648.6	.5
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	5/2	4	5/2	4	38 649.45	
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	Not Reported	Ground					38 649.5	.5
C ¹² HD:C ¹² HBr ^b	4- 748	Not Reported	Ground					38 652.7	.2
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	3/2	3	5/2	2	38 656.30	
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	3, 1, 2← 2, 1, 1	Ground					38 658.40	.10
C ¹² H ₃ Si ²⁸ H ₂ F ¹⁹	3- 241	3, 1, 2← 2, 1, 1	Ground					38 658.92	.10
(C ¹² D ₃)(C ¹² H ₃)O ¹⁶	3- 593	1, 1, 1← 0, 0, 0	Ground					38 659.	1.0
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground					38 659.44	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					38 660.	20.
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground		1		2	38 661.00	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	5/2	2	3/2	3	38 661.00	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	9, ← 8,	Excited					38 662.28	.5
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	5/2	2	5/2	2	38 663.02	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground		1		2	38 663.02	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					38 675.	20.
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground		0		1	38 675.09	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	3/2	3	5/2	4	38 675.09	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	5/2	2	3/2	2	38 675.09	
O ¹⁶ F ₂ ¹⁹	4-1611	22, 2, 21←21, 3, 18	Ground					38 675.10	.10
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	5/2	4	3/2	3	38 678.09	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	3/2	2	5/2	2	38 678.09	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground		1		0	38 678.09	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					38 680.78	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Excited	13/2		11/2		38 681.3	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Excited	7/2		5/2		38 684.5	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Excited					38 684.81	.6
S ³⁴ S ³² O ¹⁶	4-1822	3, 1, 2← 3, 0, 3	Ground					38 685.0	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Excited	11/2		9/2		38 686.0	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	3/2	2	3/2	2	38 686.52	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					38 690.	20.
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Excited	9/2		7/2		38 691.5	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	3/2	2	3/2	3	38 694.43	
Cl ₂ O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	3/2	3	3/2	3	38 694.43	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
Cl ^b O ¹⁶	4-1484	1, 1, 0← 1, 0, 1	Ground	3/2	3	3/2	2	38 694.43	
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	6, 5, 1← 6, 4, 2	Ground					38 702.	1.
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	9, ← 8,	Excited					38 707.44	.5
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Ground	13/2		11/2		38 707.5	
H ₂ C ¹² :C ¹² DF ¹⁹	4- 784	2, 0, 2← 1, 0, 1	Ground					38 710.6	.3
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Ground	7/2		5/2		38 711.6	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Ground					38 711.82	.29
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Ground	11/2		9/2		38 713.4	
t-C ¹² HD:C ¹² DBr ⁷⁹	4- 745	5, 1, 4← 4, 1, 3	Ground	9/2		7/2		38 718.8	
HDS ^{e78}	4-1756	10, 5, 6←10, 5, 5	Ground					38 724.0	
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁷	3- 822	9, ← 8,	Excited					38 731.09	.5
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	3, 0, 3← 2, 1, 2	Ground					38 735.5	.1
N ¹⁴ D ₂ H	4-1774	2, 1, 2← 2, 0, 2	Ground					38 739.13	.10
D ₂ O ¹⁶	3- 42	Not Reported						38 752.	3.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 2, 1, 1	Ground					38 757.75	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					38 762.75	.1
C ¹² H ₃ N ¹⁴ C ¹³	4- 833	2, 1← 1, 1	Ground					38 782.21	
C ¹² H ₃ N ¹⁴ C ¹³	4- 833	2, 0← 1, 0	Ground					38 783.21	
D ₂ O ¹⁶	3- 42	Not Reported						38 799.	3.
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	2, 1, 1← 1, 1, 0	Ground					38 811.4	.1
S ₃ ² O ¹⁶	4-1821	3, 1, 2← 3, 0, 3	Ground					38 814.0	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						38 825.	10.
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	Not Reported						38 833.0	
Si ²⁸ HCl ₂ ³⁵ Cl ³⁷	4-1502	8, , ← 7, ,	Ground					38 834.	1.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	4, 2, 3← 4, 1, 4	Ground					38 834.10	.1
C ¹² *H ₂ C ¹² HDC ¹² H ₂ O ¹⁶ *	4-1094	2, 1, 1← 1, 1, 0	Excited					38 834.73	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					38 836.98	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 2, 1, 1	Ground					38 852.54	.1
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	7, 2, 6← 8, 1, 7	Ground					38 859.	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					38 861.90	.1
a-C ¹² H ₂ DSi ^b H ₂ D	3- 333	2, 1, 2← 1, 1, 1						38 899.06	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 2, 1, 1	Ground					38 910.96	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	3, 0, 3← 2, 1, 2	Excited					38 915.7	.3
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	3, 3, 0← 2, 1, 1	Ground					38 917.12	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	5, 3, 3← 5, 2, 4	Ground					38 919.47	.05
C ¹² D ₃ O ¹⁶ H	3- 214	1, 0, 1← 0, 0, 0	Ground					38 923.97	.5
C ^b H ₂ ^b Cl ^b F ^b	4- 333	Not Reported						38 928.22	1.
C ¹² D ₃ O ¹⁶ H	3- 214	1, 0, 1← 0, 0, 0	Ground					38 928.89	.5
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						38 930.	10.
Cl ^b O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	3	7/2	2	38 947.12	
Cl ^b O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	1	7/2	2	38 947.12	
Cl ^b O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	7/2	2	7/2	2	38 948.98	
C ¹² H ₃ Si ²⁸ Cl ₃ ³⁵	3- 111	11, ←10,						38 950.	20.
Cl ^b O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	5/2	2	3/2	1	38 964.53	
Cl ^b O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	5/2	2	3/2	3	38 964.53	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	7/2	4	7/2	4	38 966.29	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	1	3/2	0	38 966.29	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	3	7/2	4	38 966.29	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	0	3/2	0	38 966.29	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	7/2	4	3/2	3	38 966.29	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	3	3/2	3	38 966.29	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	1	3/2	1	38 966.29	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	7/2	2	3/2	1	38 966.31	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	7/2	2	3/2	3	38 966.31	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						38 967.0	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					38 967.6	.5
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						38 970.	10.
C ¹² D ₃ O ¹⁶ H	3- 214	1, 0, 1← 0, 0, 0	Ground					38 972.05	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	3, 1, 2← 2, 1, 1	Ground					38 974.35	.1
C ¹² D ₃ O ¹⁶ H	3- 214	1, 0, 1← 0, 0, 0	Ground					38 982.88	.5
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	5/2	2	5/2	2	38 983.65	
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	9, ← 8,	Ground					38 984.86	.07
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	3	5/2	2	38 985.48	
Cl ₂ O ¹⁶	4-1484	2, 1, 1← 2, 0, 2	Ground	3/2	1	5/2	2	38 985.48	
C ¹² *HC ¹² H:C ¹² HC ¹² H:C ¹² HN ¹⁴ *	4-1201	4, 2, 2← 3, 2, 1	Ground					38 988.91	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					38 989.23	.1
Ge ⁷⁴ HCl ₃ ³⁵	4-1493	9, ← 8,	Excited					38 992.19	.07
Ge ⁷⁴ F ₃ ¹⁹ Cl ³⁵	4-1405	9, ← 8,	Ground					38 996.78	.20
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						39 000.	10.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					39 000.03	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	Not Reported	Ground					39 003.23	.1
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	2, 1, 2← 1, 1, 1	Ground					39 013.50	.2
Ge ⁷² F ₃ ¹⁹ Cl ³⁵	4-1403	9, ← 8,	Ground					39 013.81	.20
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						39 021.44	1.
C ^b H ₂ Cl ^b F ^b	4- 333	Not Reported						39 028.46	1.
Ge ⁷⁰ F ₃ ¹⁹ Cl ³⁵	4-1401	9, ← 8,	Ground					39 031.91	.30
H ₂ O ₂ ¹⁶	3- 41	Not Reported						39 033.	2.
C ¹² *H ₂ S ³⁴ C ¹² *H ₂	4- 852	5, 1, 5← 5, 1, 4	Ground					39 034.6	.2
F ¹⁹ HC ¹² O ¹⁶	4- 271	8, 1, 7← 7, 2, 6						39 039.23	.04
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						39 040.	10.
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 2, 6← 8, 1, 7						39 044.3	.1
Ge ⁷² HCl ₃ ³⁵	4-1492	9, ← 8,	Ground					39 047.07	.07
(C ¹² H ₃) ₂ O ¹⁶	3- 591	5, 1, 4← 5, 0, 5	Ground					39 047.1	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						39 048.	
Ge ⁷² HCl ₃ ³⁵	4-1492	9, ← 8,	Excited					39 055.31	.07
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						39 065.	
C ¹² D ₃ O ¹⁶ H	3- 214	1, 0, 1← 0, 0, 0	Ground					39 066.21	.5
N ¹⁴ O ₂ ¹⁶	4-1801	21, 2, 20← 22, 1, 21	Ground					39 066.70	
C ¹² D ₃ O ¹⁶ H	3- 214	1, 0, 1← 0, 0, 0	Ground					39 069.25	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
t-DHC ¹² :C ¹² DF ¹⁹	4- 791	2, 1, 1← 1, 1, 0	Ground					39 096.0	.3
N ¹⁴ O ₂ ¹⁶	4-1801	21, 2,20←22, 1,21	Ground					39 097.80	
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						39 100.	10.
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	9, ← 8,	Ground					39 109.31	.07
s-C ¹² H ₂ DSi ^b H ₂ D	3- 332	2, 0, 2← 1, 0, 1						39 111.84	
H ₂ C ¹² *O ¹⁶ C ¹³ *H ₂	4- 842	1, 1, 1← 0, 0, 0	Ground					39 116.4	.5
Ge ⁷⁰ HCl ₃ ³⁵	4-1491	9, ← 8,	Excited					39 118.91	.07
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	2, 2, 1← 1, 1, 0	Ground	7/2		5/2		39 135.12	.05
N ¹⁴ O ₂ ¹⁶	4-1801	21, 2,20←22, 1,21	Ground					39 142.46	
C ¹² H ₃ O ¹⁸ H	3- 217	18, 2, ←18, 1,	Ground					39 149.41	.1
C ¹² Cl ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 583	12, , ←11, ,	Ground					39 150.0	20.
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						39 170.	10.
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	2, 0, 2← 1, 0, 1	Ground					39 190.40	.2
N ¹⁴ O ₂ ¹⁶	4-1801	21, 2,20←22, 1,21	Ground					39 192.94	
C ¹² H ₃ O ¹⁸ H	3- 217	22, 2, ←22, 1,	Ground					39 210.48	.1
a-C ¹² H ₂ DSi ^b H ₂ D	3- 333	2, 0, 2← 1, 0, 1						39 213.18	
N ¹⁴ O ₂ ¹⁶	4-1801	21, 2,20←22, 1,21	Ground					39 235.98	
N ¹⁴ O ₂ ¹⁶	4-1801	21, 2,20←22, 1,21	Ground					39 247.28	
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	3, 3, 1← 3, 2, 2	Ground					39 254.37	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 2, 2← 3, 1, 3	Ground					39 272.12	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 2, 2← 3, 1, 3	Ground					39 272.87	.05
(C ¹² H ₃) ₂ S ³²	3- 601	3, 2, 2← 3, 1, 3	Ground					39 273.64	.05
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	6, 3, 3← 6, 2, 4	Ground					39 273.7	.2
(C ¹² H ₃) ₂ S ³²	3- 601	8, 2, 6← 8, 1, 7	Ground					39 285.65	.05
(C ¹² H ₃) ₂ S ³²	3- 601	8, 2, 6← 8, 1, 7	Ground					39 286.23	.05
(C ¹² H ₃) ₂ S ³²	3- 601	8, 2, 6← 8, 1, 7	Ground					39 286.80	.05
D ₂ N ¹⁴ C ¹² HO ¹⁶	3- 154	2, 1, 1← 1, 1, 0	Ground					39 290.66	.2
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						39 300.	10.
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	28,13, ←27,14,	Ground					39 320.40	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	28,13, ←27,14,	Ground					39 321.14	.1
C ^b *H ₂ ^b N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						39 325.	10.
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	2, 1, 1← 1, 1, 0	Ground					39 343.4	.5
S ₂ ³² O ¹⁶	4-1821	4, 1, 3← 3, 1, 2	Excited					39 347.6	
S ₂ ³² O ¹⁶	4-1821	4, 1, 3← 3, 1, 2	Ground					39 356.2	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 1, 1← 1, 1, 0	Ground					39 362.46	.4
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	13, 2,11←13, 1,12	Ground					39 388.43	.1
H ₂ C ¹² :C ¹³ HF ¹⁹	4- 783	2, 0, 2← 1, 0, 1	Ground					39 401.13	.05
S ₂ ³² O ¹⁶	4-1821	3, 1, 2← 3, 0, 3	Excited					39 402.2	
Cl ₂ ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	9/2	4	3/2	3	39 406.50	
Cl ₂ ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	2	3/2	1	39 406.50	
Cl ₂ ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	7/2	5	9/2	6	39 408.03	
Cl ₂ ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	2	3/2	3	39 409.46	
Cl ₂ ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	3	3/2	3	39 412.14	
Cl ₂ ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	0	3/2	1	39 412.14	
Cl ₂ ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	9/2	6	9/2	6	39 416.36	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F ₁ '	F'	F ₁	F		
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	5/2	3	9/2	4	39 418.40	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	7/2	5	9/2	4	39 418.40	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	9/2	4	9/2	4	39 422.61	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	5/2	3	3/2	2	39 424.22	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	2	3/2	2	39 424.22	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	3	3/2	2	39 425.92	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	7/2	4	5/2	3	39 425.92	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	1	3/2	2	39 425.92	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	7/2	4	7/2	5	39 428.66	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	3	9/2	4	39 428.66	
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						39 430.	10.
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	5/2	3	5/2	3	39 430.00	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	7/2	5	7/2	5	39 432.12	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	7/2	2	7/2	2	39 432.78	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	9/2	4	7/2	5	39 437.30	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	3/2	2	5/2	3	39 437.30	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	7/2	4	7/2	4	39 438.70	
O ₃ ¹⁸	4-1845	12, 2.10←13, 1,13	Ground					39 439.	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	7/2	5	7/2	4	39 440.42	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	9/2	6	7/2	5	39 440.42	
Cl ^b O ¹⁶	4-1484	3, 1, 2← 3, 0, 3	Ground	5/2	3	7/2	4	39 443.04	
c-HDC ¹² :C ¹² HF ¹⁹	4- 787	2, 1, 1← 1, 1, 0	Ground					39 445.0	.3
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	2, 0, 2← 1, 0, 1	Excited					39 445.40	.05
Cl ^b O ¹⁶	4-1484	12, 2.10←13, 1,13	Ground					39 446.28	
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 1, 1← 1, 1, 0	Ground					39 454.94	.3
H ₂ C ^b *O ¹⁶ C ^b *H ₂	4- 846	Not Reported	Excited					39 462.	3.
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 462.03	.10
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	8, 5, 3← 8, 4, 4	Ground					39 467.2	.2
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	2, 0, 2← 1, 0, 1	Ground					39 477.97	.05
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	4, 2, 3← 5, 1, 4	Ground					39 492.18	
H ₂ O ₂ ¹⁶	3- 41	Not Reported						39 495.	2.
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						39 500.	10.
C ¹² H ₃ O ¹⁸ H	3- 217	19, 2, 1←19, 1,	Ground					39 505.01	.1
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	9, ← 8,	Excited					39 524.50	.3
C ¹² *H ₂ S ³⁴ C ¹² *H ₂	4- 852	2, 1, 1← 1, 1, 0	Ground					39 527.9	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					39 531.29	
a-C ¹² H ₂ DSi ^b H ₂ D	3- 333	2, 1, 1← 1, 1, 0						39 531.54	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 2← 1, 1, 1			1		0	39 533.53	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 2← 1, 1, 1			3		2	39 535.25	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 2← 1, 1, 1			2		1	39 536.16	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 2← 1, 1, 1			1		1	39 536.88	.10
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	9, ← 8,	Excited					39 550.89	.3
C ¹² H ₃ C ¹³ HO ¹⁶	3- 477	2, 1, 1← 1, 1, 0	Ground					39 557.00	.3
Si ²⁸ HCl ₃ ³⁵	4-1501	8, ← 7,	Ground					39 560.	10.
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 2← 1, 1, 1	Ground		1		0	39 568.84	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 2← 1, 1, 1	Ground	3		2		39 570.50	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 2← 1, 1, 1	Ground	2		1		39 571.43	.10
C ¹² H ₃ O ¹⁸ H	3- 217	21, 2, ←21, 1,	Ground					39 574.97	.1
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	1, 1, 1← 0, 0, 0	Ground					39 581.8	.1
D ₂ C ¹² *O ¹⁶ C ¹² *D ₂	4- 843	5, 4, 1← 5, 3, 2	Ground					39 592.	
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	2, 2, 1← 1, 1, 0	Ground					39 592.57	.1
C ¹² *D ₂ C ¹² H ₂ C ¹² D ₂ O ¹⁶ *	4-1092	2, 2, 1← 1, 1, 0	Excited					39 592.6	.1
C ¹² H ₃ C ¹² HO ¹⁶	3- 471	2, 1, 1← 1, 1, 0	Ground					39 594.86	.3
C ¹³ DF ₃ ¹⁹	4- 284	2, ← 1,	Ground					39 597.13	.10
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	9, ← 8,	Excited					39 597.95	.3
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						39 600.	10.
C ¹² Cl ₂ ³⁵ Cl ³⁷ C ¹² N ¹⁴	4- 582	12, , ←11, ,	Ground					39 600.0	20.
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 601.68	.10
t-HDN ¹⁵ C ¹² HO ¹⁶	3- 159	2, 1, 1← 1, 1, 0	Ground					39 605.82	
C ¹² DF ₃ ¹⁹	4- 283	2, 0← 1, 0	Excited					39 606.04	.10
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	14, 1,13←14, 1,14	Ground					39 612.55	
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 620.32	.10
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 622.05	.10
(C ¹² H ₃) ₃ Si ²⁸ Cl ³⁵	3- 821	9, ← 8,	Excited					39 622.21	.3
C ¹² DF ₃ ¹⁹	4- 283	2, 1← 1, 1	Excited					39 628.39	.10
s-C ¹² H ₂ DSi ^b H ₂ D	3- 332	2, 1, 1← 1, 1, 0						39 629.92	
H ₂ N ¹⁴ C ¹² DO ¹⁶	3- 155	2, 1, 2← 1, 1, 1	Ground					39 632.17	
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 641.50	.10
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					39 642.64	
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 646.51	.10
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 651.45	.10
c-HDN ¹⁵ C ¹² HO ¹⁶	3- 158	2, 0, 2← 1, 0, 1	Ground					39 655.90	
D ₂ O ₂ ¹⁶	3- 42	Not Reported						39 659.	3.
C ¹² H ₃ O ¹⁸ H	3- 217	20, 2, ←20, 1,	Ground					39 661.80	.1
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	5, 1, 4← 5, 0, 5	Ground					39 664.22	.5
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	3, 3, 1← 3, 2, 2	Ground					39 680.	1.
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Ground					39 684.21	.10
C ¹² DF ₃ ¹⁹	4- 283	2, 1← 1, 1	Excited					39 691.98	.10
C ¹² H ₃ Si ^b HD ₂	3- 326	2, 1, 2← 1, 1, 1						39 696.34	.2
C ^b *H ₂ N ^b H ^b C ^b *H ₂	4- 863	Not Reported						39 700.	10.
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 700.07	.10
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 701.76	.10
C ¹² H ₃ Si ^b HD ₂	3- 326	2, 1, 2← 1, 1, 1						39 703.74	.2
C ¹² DF ₃ ¹⁹	4- 283	2, ← 1,	Excited					39 708.18	.10
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 1, 2← 1, 1, 1	Excited					39 712.3	.5
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 1, 2← 1, 1, 1	Ground					39 725.4	.5
H ₂ C ¹³ :C ¹² HF ¹⁹	4- 782	2, 1, 1← 1, 1, 0	Ground					39 744.74	.05
C ¹² DF ₃ ¹⁹	4- 283	2, 1← 1, 1	Excited					39 755.60	.10
H ₂ O ₂ ¹⁶	3- 41	Not Reported						39 760.	2.
C ¹² DF ₃ ¹⁹	4- 283	2, 0← 1, 0	Excited					39 762.87	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ C ¹² HO ¹⁶	3- 474	5, 1, 4← 5, 0, 5	Ground					39 763.40	.3
S ³⁴ S ³² O ¹⁶	4-1822	4, 1, 3← 4, 0, 4	Ground					39 772.9	
(C ¹² H ₃) ₂ O ¹⁶	3- 591	Not Reported	Ground					39 800.	20.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					39 804.42	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					39 809.83	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 1, 2← 1, 1, 1	Excited					39 820.	
H ₂ N ¹⁵ C ¹² HO ¹⁶	3- 156	2, 1, 2← 1, 1, 1	Ground					39 824.19	
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	6, 3, 3← 6, 2, 4	Ground					39 828.8	.2
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 1, 2← 1, 1, 1	Excited					39 845.8	.5
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						39 900.0	25.
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					39 917.60	
C ¹² *H ₂ S ^b C ¹² *H ₂ ^b	4- 854	Not Reported						39 920.0	25.
N ¹⁴ H ₃	4-1771	16,16←16,16	Ground					39 941.54	.30
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					39 942.66	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 0, 2← 1, 0, 1	Excited					39 958.2	.5
S ₂ ³² O ¹⁶	4-1821	4, 1, 3← 4, 0, 4	Ground					39 966.8	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 0, 2← 1, 0, 1	Ground					39 991.0	.5
C ^b *H ₂ N ^b H ^b C ^b *H ₂ ^b	4- 863	Not Reported						40 000.	10.
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	5	11/2	4	40 022.64	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	3	11/2	4	40 022.64	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	11/2	4	11/2	4	40 030.56	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	9/2	4	7/2	5	40 032.76	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	9/2	4	7/2	3	40 032.76	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 035.48	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 1, 2← 1, 1, 1	Ground					40 038.80	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	5	7/2	5	40 040.96	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	2	7/2	2	40 040.96	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	11/2	6	11/2	6	40 040.96	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	2	7/2	3	40 040.96	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	3	7/2	2	40 040.96	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	5	11/2	6	40 040.96	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	11/2	6	7/2	5	40 040.96	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	3	7/2	3	40 040.98	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	11/2	4	7/2	5	40 049.20	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	11/2	4	7/2	3	40 049.20	
C ¹² Cl ₃ ³⁵ C ¹² N ¹⁴	4- 581	12, ←11,	Ground					40 050.0	20.
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	9/2	4	9/2	4	40 051.18	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	5	9/2	4	40 059.51	
Cl ₂ O ¹⁶	4-1484	4, 1, 3← 4, 0, 4	Ground	7/2	3	9/2	4	40 059.51	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 0, 2← 1, 0, 1	Excited					40 068.0	.5
(C ¹² H ₃) ₂ S ³²	3- 601	6, 1, 5← 6, 0, 6	Ground					40 068.47	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 1, 5← 6, 0, 6	Ground					40 069.09	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 1, 5← 6, 0, 6	Ground					40 069.70	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 070.6	
O ^b O ^b O ^b	4-1847	Not Reported						40 080.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₂	F' ₁	F		
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						40 083.	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 1, 2← 1, 1, 1	Excited					40 087.77	
C ¹² H ₃ Si ^b HD ₂	3- 326	2, 0, 2← 1, 0, 1						40 100.00	.4
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 106.6	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 1, 2← 1, 1, 1	Excited					40 110.92	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 0, 2← 1, 0, 1	Excited					40 120.0	.5
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 1, 2← 1, 1, 1	Excited					40 135.35	
(C ¹² D ₃) ₂ O ¹⁶	3- 592	Not Reported	Ground					40 185.4	20.
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 1, 1← 1, 1, 0	Excited					40 203.0	.5
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	2, 1← 1, 1	Ground					40 210.46	.1
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	2, 0← 1, 0	Ground					40 211.36	.1
C ¹³ D ₃ F ¹⁹	4- 464	1, 0← 0, 0	Ground					40 223.64	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 229.30	
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					40 229.8	.5
c-HDC ¹² *O ¹⁶ C ¹² *DH	4- 845	3, 2, 2← 3, 1, 3	Ground					40 231.5	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						40 240.	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 1, 1← 1, 1, 0	Ground					40 252.2	.5
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	41,20, ←40,21,	Ground					40 275.31	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	41,20, ←40,21,	Ground					40 276.05	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 285.16	
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	2, 1← 1, 1	Excited					40 313.37	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 1, 1← 1, 1, 0	Excited					40 315.9	.5
t-HDN ¹⁵ C ¹² HO ¹⁶	3- 159	5, 0, 5← 4, 1, 4	Ground					40 332.08	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 338.98	
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					40 357.96	
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	2, 1← 2, 1	Excited					40 364.07	
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	2, 0← 1, 0	Excited					40 366.55	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 386.20	
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	2, 1, 1← 1, 1, 0	Excited					40 394.2	.5
C ¹² D ₃ C ¹² :C ¹² D	4-1046	3, 2← 2, 2	Ground					40 403.60	.1
C ¹² D ₃ C ¹² :C ¹² D	4-1046	3, 1← 2, 1	Ground					40 405.21	.1
C ¹² D ₃ C ¹² :C ¹² D	4-1046	3, 0← 2, 0	Ground					40 405.75	.1
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 411.32	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 0, 2← 1, 0, 1	Ground					40 417.90	
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	2, 1← 1, 1	Excited					40 424.49	
H ₂ N ¹⁵ C ¹² DO ¹⁶	3- 157	2, 0, 2← 1, 0, 1	Ground					40 433.42	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 0, 2← 1, 0, 1	Excited					40 440.17	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 0, 2← 1, 0, 1	Excited					40 462.26	
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					40 467.44	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	10, 1, 9←10, 0,10	Ground					40 469.72	.1
O ¹⁶ O ¹⁸ O ¹⁸	4-1844	5, 0, 5← 4, 1, 4	Ground					40 476.	
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	2, 1, 1← 1, 1, 0	Ground					40 500.5	
C ¹² H ₃ Si ^b HD ₂	3- 326	2, 1, 1← 1, 1, 0						40 503.64	.4
C ¹² H ₃ Si ^b HD ₂	3- 326	2, 1, 1← 1, 1, 0						40 510.98	.4
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 0, 2← 1, 0, 1	Excited					40 532.78	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ± MHz
				F' ₁	F'	F ₁	F		
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	2, 1, 1← 1, 1, 0	Ground					40 551.94	.2
(C ¹² H ₃) ₃ C ¹² Br ⁸¹	3- 962	10, ← 9,	Ground					40 565.0	.3
(C ¹² H ₃) ₃ C ¹² I ¹²⁷	3- 991	13, ←12,	Ground					40 570.	30.
(C ¹² H ₃) ₃ Si ²⁸ Br ⁸¹	3- 812	14, ←13,	Ground					40 575.5	.3
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 582.20	
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	7, 7, 0← 7, 6, 1	Ground					40 588.6	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	5, 0, 5← 4, 0, 4	Ground		7/2		5/2	40 599.43	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	5, 0, 5← 4, 0, 4	Ground		9/2		7/2	40 599.89	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	5, 0, 5← 4, 0, 4	Ground		13/2		11/2	40 600.75	
N ¹⁴ O ₂ ¹⁶ Cl ³⁷	4-1462	5, 0, 5← 4, 0, 4	Ground		11/2		9/2	40 601.22	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 606.69	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						40 640.	
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	2, 0, 2← 1, 0, 1	Ground					40 647.52	.2
C ¹² D ₃ O ¹⁶ H	3- 214	2, , ← 1, ,	Ground					40 649.5	.5
H ₂ C ¹² :C ¹² DF ¹⁹	4- 784	2, 1, 1← 1, 1, 0	Ground					40 660.7	.3
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					40 661.38	
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					40 671.06	
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	5, 1, 5← 5, 1, 4	Ground					40 672.5	.2
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 682.11	
F ¹⁹ HC ¹² O ¹⁸	4- 274	2, 1, 2← 1, 1, 1	Ground					40 692.6	.4
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	10, 7← 9, 7	Ground					40 695.10	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	10, 6← 9, 6	Ground					40 700.28	.1
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					40 703.20	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	10, 5← 9, 5	Ground					40 704.62	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	10, 4← 9, 4	Ground					40 708.20	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	10, 3← 9, 3	Ground					40 710.96	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	10, 2← 9, 2	Ground					40 712.96	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	10, 1← 9, 1	Ground					40 714.14	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	10, 0← 9, 0	Ground					40 714.56	.1
C ¹² *H ₂ N ¹⁴ HC ¹² *H ₂	4- 861	4, 2, 2← 4, 1, 3	Ground					40 785.8	
C ¹² H ₂ DSi ^b H ₃	3- 327	2, 1, 2← 1, 1, 1						40 791.24	.2
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 1, 1← 1, 1, 0	Ground					40 793.62	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 799.31	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 1, 1← 1, 1, 0	Excited					40 809.98	
C ¹² H ₂ DSi ^b H ₃	3- 327	2, 1, 2← 1, 1, 1						40 823.44	.2
(C ¹² H ₃) ₃ C ¹² Br ⁷⁹	3- 961	10, ← 9,	Ground					40 831.8	.3
C ¹² H ₂ Cl ³⁵ Cl ³⁷	4- 342	2, 1, 2← 1, 0, 1	Ground					40 842.	1.
F ¹⁹ DC ¹² O ¹⁶	4- 272	4, 2, 3← 5, 1, 4						40 852.1	.1
C ¹² *H ₂ S ³² C ¹² *H ₂	4- 851	10, 3, 8←10, 3, 7	Ground					40 865.1	.2
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	2, 1, 2← 1, 1, 1	Ground					40 874.91	
H ₂ N ¹⁴ C ¹² DO ¹⁶	3- 155	3, 2, 2← 4, 1, 3	Ground					40 883.81	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					40 898.49	
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	6, ← 5,	Excited					40 906.3	.3
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	6, ← 5,	Excited					40 913.0	.5
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground					40 922.9	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	2, 1, 1← 1, 1, 0	Excited					40 926.95	
HDS ³²	4-1727	5, 3, 2← 5, 3, 3	Ground					40 929.20	.05
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					40 931.18	
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	6, ← 5,	Ground					40 931.6	.3
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						40 940.	
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	6, ← 5,	Excited					40 959.4	.5
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					40 964.38	
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	6, ← 5,	Excited					40 977.	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 2, ← 2, 2,	Ground					40 983.2	.2
H ₂ C ¹² :C ¹³ HF ¹⁹	4- 783	2, 1, 1← 1, 1, 0	Ground					40 987.77	.05
C ¹² H ₂ DSi ^b H ₃	3- 327	2, 0, 2← 1, 0, 1						40 988.76	.4
t-HDC ¹² *O ¹⁶ C ¹² *HD	4- 844	3, 2, 2← 3, 1, 3	Ground					40 992.	
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					40 993.38	
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	2, 1, 1← 1, 1, 0	Excited					41 003.04	.05
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	6, ← 5,	Excited					41 008.	
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	2, 1, 1← 1, 1, 0	Ground					41 028.57	.05
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	Not Reported	Ground					41 040.98	
(C ¹² H ₃) ₃ Si ²⁸ F ¹⁹	3- 831	6, ← 5,	Excited					41 062.5	.5
O ^b O ^b O ^b	4-1847	Not Reported						41 063.	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 0, 2← 1, 0, 1	Ground	2		1		41 095.53	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 0, 2← 1, 0, 1	Ground	3		2		41 095.53	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 0, 2← 1, 0, 1		1		1		41 096.43	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 0, 2← 1, 0, 1		3		2		41 097.95	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 0, 2← 1, 0, 1		2		1		41 097.95	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 0, 2← 1, 0, 1		2		2		41 098.76	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 0, 2← 1, 0, 1		1		0		41 098.76	.10
H ₂ N ¹⁵ C ¹² DO ¹⁶	3- 157	4, 0, 4← 3, 1, 3	Ground					41 117.81	
Ge ⁷⁴ HCl ₃ ³⁷	4-1496	10, ← 9,	Ground					41 144.02	.07
C ¹² H ₂ DSi ^b H ₃	3- 327	2, 1, 1← 1, 1, 0						41 155.38	.2
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					41 167.52	
C ¹² H ₂ DSi ^b H ₃	3- 327	2, 1, 1← 1, 1, 0						41 187.62	.2
C ¹² H ₂ Cl ₂ ³⁵	4- 341	2, 1, 2← 1, 0, 1	Ground					41 197.8	.2
Ge ⁷² HCl ₃ ³⁷	4-1495	10, ← 9,	Ground					41 208.73	.07
Si ³⁰ F ₃ ¹⁹ D	4-1646	3, ← 2,	Ground					41 222.73	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						41 230.	
C ^b HF ₃ ^b	4- 285	2, ← 1,						41 241.52	.10
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground					41 253.7	.2
H ₂ N ¹⁵ C ¹² HO ¹⁶	3- 156	2, 0, 2← 1, 0, 1	Ground					41 262.58	
N ¹⁴ O ₂ ¹⁶	4-1801	10, 0,10← 9, 1, 9	Ground					41 277.92	
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	30,14, ←29,15,	Ground					41 279.30	.1
C ¹² H ₃ C ¹² *HO ¹⁶ C ¹² *H ₂	3- 761	30,14, ←29,15,	Ground					41 279.97	.1
Si ²⁹ F ₃ ¹⁹ D	4-1644	3, ← 2,	Ground					41 280.46	.1
C ^b HF ₃ ^b	4- 285	2, ← 1,						41 287.45	.10
c-HDN ¹⁵ C ¹² HO ¹⁶	3- 158	2, 1, 1← 1, 1, 0	Ground					41 290.30	
C ¹² H ₃ Si ²⁸ Cl ³⁵ Cl ₂ ³⁷	3- 114	12, , ←11, ,	Ground					41 310.	20.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F ₂ F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² HF ₃ ¹⁹	4- 281	2, ← 1,	Excited		41 316.72	.10
(C ¹² H ₃) ₃ C ¹² Cl ³⁷	3- 972	7, ← 6,	Ground		41 330.	30.
C ¹² HF ₃ ¹⁹	4- 281	2, 1← 1, 1	Excited		41 334.0	.10
C ¹² HF ₃ ¹⁹	4- 281	2, 1← 1, 1	Excited		41 338.99	.10
Si ²⁸ F ₃ ¹⁹ D	4-1642	3, ← 2,	Ground		41 340.00	.1
C ^b HF ₃ ^b	4- 285	2, ← 1,			41 345.49	.10
C ^b HF ₃ ^b	4- 285	2, ← 1,			41 350.02	.10
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	4, ← 3,	Excited		41 356.06	
C ¹² HF ₃ ¹⁹	4- 281	2, ← 1,	Ground		41 394.95	.18
C ¹² HF ₃ ¹⁹	4- 281	2, 1← 1, 1	Excited		41 411.52	.10
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	4, ← 3,	Excited		41 415.94	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	4, ← 3,	Excited		41 418.30	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	4, ← 3,	Excited		41 419.48	
C ¹² HF ₃ ¹⁹	4- 281	2, 0← 1, 0	Excited		41 426.22	.10
C ¹² HF ₃ ¹⁹	4- 281	2, ← 1,	Excited		41 441.00	.10
S ₂ O ¹⁶	4-1821	5, 1, 4← 5, 0, 5	Ground		41 442.2	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 2, ← 2, 2,	Ground		41 467.2	.2
HDS ^{e82}	4-1758	1, 1, 1← 1, 1, 0	Ground		41 476.1	
C ¹² H ₃ C ¹² F ₃ ¹⁹	3- 411	4, ← 3,	Ground		41 480.72	.1
C ¹² H ₃ Si ^b H ₂ D	3- 325	2, 1, 2← 1, 1, 1			41 482.84	.2
C ¹² HF ₃ ¹⁹	4- 281	2, 1← 1, 1	Excited		41 483.60	.10
C ¹² H ₃ Si ^b H ₂ D	3- 325	2, 1, 2← 1, 1, 1			41 502.14	.4
HDS ^{e80}	4-1757	1, 1, 1← 1, 1, 0	Ground		41 504.5	
H ₂ N ¹⁴ C ¹² DO ¹⁶	3- 155	2, 0, 2← 1, 0, 1	Ground		41 521.85	
(C ¹² H ₃) ₂ S ³²	3- 601	11, 2,10←10, 3, 7	Ground		41 529.13	.05
(C ¹² H ₃) ₂ S ³²	3- 601	11, 2,10←10, 3, 7	Ground		41 530.31	.05
(C ¹² H ₃) ₂ S ³²	3- 601	11, 2,10←10, 3, 7	Ground		41 531.49	.05
HDS ^{e78}	4-1756	1, 1, 1← 1, 1, 0	Ground		41 534.1	
C ¹² H ₃ N ¹⁴ O ₂ ¹⁶	3- 171	3, 0, ← 2, 0,	Ground		41 534.9	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported			41 540.	
HDS ^{e77}	4-1755	1, 1, 1← 1, 1, 0	Ground		41 549.0	
HDS ^{e76}	4-1759	1, 1, 1← 1, 1, 0	Ground		41 565.4	
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	4, 2, 2← 4, 1, 3	Ground		41 581.	1.
F ¹⁹ DC ¹² O ¹⁶	4- 272	2, 1, 2← 1, 1, 1			41 586.8	.1
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 2, ← 2, 2,	Ground		41 592.7	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		41 615.12	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		41 615.76	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 2, ← 2, 2,	Ground		41 638.	2.0
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		41 658.42	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	10, 2, ← 9, 3,	Ground		41 658.42	
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	2, 1, 2← 1, 1, 1	Ground		41 672.98	.20
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground		41 684.6	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported			41 688.	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground		41 736.0	.2
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground		41 745.6	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F ₇	F ₁	F		
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						41 750.	
C ¹² H ₃ Si ^b H ₂ D	3- 325	2, 0, 2← 1, 0, 1						41 758.92	
C ^b HF ₃	4- 285	2, ← 1,						41 759.73	.10
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 0, ← 2, 0,	Ground					41 792.5	1.0
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 0, ← 2, 0,	Ground					41 827.5	1.0
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					41 830.54	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 2, ← 2, 2,	Ground					41 856.	1.0
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		2		1	41 856.53	.2
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 0, ← 2, 0,	Ground					41 864.	1.0
C ¹² H ₃ Si ^b H ₂ D	3- 325	2, 0, 2← 1, 0, 1						41 880.10	.4
C ¹² H ₃ Si ²⁸ Cl ³⁵ Cl ³⁷	3- 113	12, , ←11, ,						41 900.	20.
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	2, 1, 2← 1, 1, 1	Ground					41 923.0	.6
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 0, ← 2, 0,	Ground					41 924.8	.2
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground					41 924.9	.2
C ¹² ₃ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 1← 1, 1, 0	Ground					41 932.7	.1
C ¹² ₃ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 1← 1, 1, 0	Excited					41 940.5	.1
C ¹² ₃ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 1← 1, 1, 0	Excited					41 945.7	.1
C ¹² ₃ H ₂ C ¹² H ₂ C ¹² H ₂ O ¹⁶ *	4-1091	2, 1, 1← 1, 1, 0	Excited					41 950.5	.1
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 2, ← 2, 2,	Ground					41 966.	2.0
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		2		2	41 968.48	.2
(C ¹² H ₃) ₂ S ³²	3- 601	9, 3, 6← 9, 2, 7	Ground					41 972.48	.05
(C ¹² H ₃) ₂ S ³²	3- 601	9, 3, 6← 9, 2, 7	Ground					41 973.22	.05
(C ¹² H ₃) ₂ S ³²	3- 601	9, 3, 6← 9, 2, 7	Ground					41 973.95	.05
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		3		2	41 977.60	.2
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground					41 995.4	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						42 000.	
B ₃ ¹¹ H ₉	4- 51	3, ← 2,	Ground					42 017.3	.1
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						42 020.	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 2, ← 2, 2,	Ground					42 030.	2.0
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		2		3	42 047.54	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		3		3	42 055.84	.2
C ¹² HD ₂ C ¹² :C ¹² D	4-1051	3, 1, 3← 2, 1, 2	Ground					42 063.15	.1
C ^b HF ₃	4- 285	2, ← 1,						42 073.64	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 2← 1, 1, 1	Ground		3		2	42 093.42	.10
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		1		2	42 096.40	.2
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 2← 1, 1, 1	Ground		1		0	42 097.58	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 2← 1, 1, 1	Ground		3		2	42 099.35	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 2← 1, 1, 1	Ground		2		1	42 100.24	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					42 101.94	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	21, 5, ←20, 6,	Ground					42 104.30	
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		2		2	42 109.20	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		0		1	42 112.40	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		3		2	42 117.52	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground		2		1	42 135.12	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						42 150.	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					42 163.8	.5
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 0, ← 2, 0,	Ground					42 187.2	.2
C ¹² HD ₂ C ¹² : C ¹² D	4-1051	3, 2, 2← 2, 2, 1	Ground					42 230.22	.1
C ¹² HD ₂ C ¹² : C ¹² D	4-1051	3, 2, 1← 2, 2, 0	Ground					42 230.61	.1
C ¹² HD ₂ C ¹² : C ¹² D	4-1051	3, 0, 3← 2, 0, 2	Ground					42 232.30	.1
(C ¹² H ₃) ₃ C ¹² Cl ³⁵	3- 971	7, ← 6,	Ground					42 243.8	.3
C ¹² H ₃ Si ^b H ₂ D	3- 325	2, 1, 1← 1, 1, 0						42 264.12	.4
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						42 280.	
C ¹² H ₃ Si ^b H ₂ D	3- 325	2, 1, 1← 1, 1, 0						42 283.52	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						42 285.	
B ¹¹ B ¹⁰ B ₃ ¹¹ H ₉	4- 53	3, 2, 1← 2, 1, 1	Ground					42 286.5	.2
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					42 292.1	.5
O ^b O ^b O ^b	4-1847	Not Reported						42 332.	
(C ¹² H ₃) ₂ S ³²	3- 601	9, 2, 8← 8, 3, 5	Ground					42 361.59	.05
(C ¹² H ₃) ₂ S ³²	3- 601	9, 2, 8← 8, 3, 5	Ground					42 362.56	.05
(C ¹² H ₃) ₂ S ³²	3- 601	9, 2, 8← 8, 3, 5	Ground					42 363.55	.05
c-HDN ¹⁴ C ¹² HO ¹⁶	3- 152	2, 1, 1← 1, 1, 0	Ground					42 363.74	
HC ¹² O ¹⁶ N ¹⁴ H ₂	3- 151	2, 0, 2← 1, 0, 1	Ground					42 386.07	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 2, ← 2, 2,	Ground					42 391.4	.2
C ¹² HD ₂ C ¹² : C ¹² D	4-1051	3, 1, 2← 2, 1, 1	Ground					42 400.70	.1
H ₃ C ¹² C ¹² : C ¹² C ¹² : C ¹² D	4-1192	11, 7←10, 7	Ground					42 434.89	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground					42 435.8	
H ₃ C ¹² C ¹² : C ¹² C ¹² : C ¹² D	4-1192	11, 6←10, 6	Ground					42 440.20	.1
H ₃ C ¹² C ¹² : C ¹² C ¹² : C ¹² D	4-1192	11, 5←10, 5	Ground					42 444.61	.1
H ₃ C ¹² C ¹² : C ¹² C ¹² : C ¹² D	4-1192	11, 4←10, 4	Ground					42 448.24	.1
O ^b O ^b O ^b	4-1847	Not Reported						42 449.	
H ₃ C ¹² C ¹² : C ¹² C ¹² : C ¹² D	4-1192	11, 3←10, 3	Ground					42 451.03	.1
H ₃ C ¹² C ¹² : C ¹² C ¹² : C ¹² D	4-1192	11, 2←10, 2	Ground					42 453.05	.1
H ₃ C ¹² C ¹² : C ¹² C ¹² : C ¹² D	4-1192	11, 1←10, 1	Ground					42 454.25	.1
H ₃ C ¹² C ¹² : C ¹² C ¹² : C ¹² D	4-1192	11, 0←10, 0	Ground					42 454.66	.1
B ¹¹ B ¹⁰ B ₃ ¹¹ H ₉	4- 53	3, 1, 2← 2, 0, 2	Ground					42 488.1	.2
C ¹² H ₃ Si ²⁸ Cl ₃ ³⁵	3- 111	12, ←11,						42 500.	25.
N ¹⁵ F ₃ ¹⁹	4-1652	2, ← 1,	Ground					42 517.38	.10
B ¹¹ B ¹⁰ B ₃ ¹¹ H ₉	4- 53	3, 2, 2← 2, 1, 2	Ground					42 525.3	.4
B ¹⁰ B ₄ ¹¹ H ₉	4- 52	3, ← 2,	Ground					42 539.8	.2
B ¹¹ B ¹⁰ B ₃ ¹¹ H ₉	4- 53	3, 3, 0← 2, 2, 0	Ground					42 563.1	.2
(C ¹² H ₃) ₂ S ³²	3- 601	8, 3, 5← 8, 2, 6	Ground					42 572.36	.05
(C ¹² H ₃) ₂ S ³²	3- 601	8, 3, 5← 8, 2, 6	Ground					42 573.17	.05
(C ¹² H ₃) ₂ S ³²	3- 601	8, 3, 5← 8, 2, 6	Ground					42 573.97	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					42 622.36	
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground					42 640.	2.0
t-HDN ¹⁴ C ¹² HO ¹⁶	3- 153	5, 0, 5← 4, 1, 4	Ground					42 642.30	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						42 700.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					42 720.94	
N ¹⁴ F ₃ ¹⁹	4-1651	2, 0← 1, 0	Ground		2		2	42 721.73	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ F ₃ ¹⁹	4-1651	2, 1← 1, 1	Ground	2		1		42 722.16	
N ¹⁴ F ₃ ¹⁹	4-1651	2, 0← 1, 0	Ground	1		0		42 722.16	
N ¹⁴ F ₃ ¹⁹	4-1651	2, 1← 1, 1	Ground	2		2		42 723.28	
N ¹⁴ F ₃ ¹⁹	4-1651	2, ← 1,	Ground					42 723.84	.10
N ¹⁴ F ₃ ¹⁹	4-1651	2, 0← 1, 0	Ground	2		1		42 723.94	
N ¹⁴ F ₃ ¹⁹	4-1651	2, 0← 1, 0	Ground	3		2		42 723.94	
N ¹⁴ F ₃ ¹⁹	4-1651	2, 1← 1, 1	Ground	3		2		42 724.36	
N ¹⁴ F ₃ ¹⁹	4-1651	2, 1← 1, 1	Ground	1		0		42 726.60	
N ¹⁴ F ₃ ¹⁹	4-1651	2, 0← 1, 0	Ground	1		1		42 727.39	
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 1← 1, 1, 0		3		2		42 728.98	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ D	3- 142	2, 1, 1← 1, 1, 0		1		0		42 728.98	.10
B ¹¹ B ¹⁰ B ₃ ¹¹ H ₉	4- 53	3, 3, 1← 2, 2, 1	Ground					42 776.1	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	21, 5, ←20, 6,	Ground					42 804.58	
O ₃ ¹⁶	4-1841	1, 1, 1← 2, 0, 2	Ground					42 832.62	.07
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground					42 906.8	.2
Cl ³⁷ O ₃ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground	1		1		42 948.50	.2
F ¹⁹ HC ¹² O ¹⁶	4- 271	2, 1, 2← 1, 1, 1						42 950.7	.1
C ¹² D ₃ N ¹⁴ O ₂ ¹⁶	3- 172	3, 1, ← 2, 1,	Ground					42 980.2	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					43 040.72	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	11, 4, ←12, 3,	Ground					43 040.72	
N ¹⁴ H ₂ D	4-1773	3, 1, 3← 3, 0, 3	Ground					43 042.48	.10
HDSe ⁸²	4-1758	3, 2, 2← 3, 2, 1	Ground					43 058.4	
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground	1		2		43 060.24	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground	2		1		43 104.18	.2
HDSe ⁸⁰	4-1757	3, 2, 2← 3, 2, 1	Ground					43 106.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	0		1		43 112.78	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	1		1		43 124.95	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2		1		43 140.30	.2
HDSe ⁷⁸	4-1756	3, 2, 2← 3, 2, 1	Ground					43 156.8	
F ¹⁹ HC ¹² O ¹⁸	4- 274	2, 1, 1← 1, 0, 1	Ground					43 172.2	.4
HDSe ⁷⁷	4-1755	3, 2, 2← 3, 2, 1	Ground					43 183.1	
HC ¹³ O ¹⁶ O ¹⁶ H	3- 75	2, 1, 2← 1, 1, 1	Ground					43 190.4	.6
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground	1		2		43 201.54	.2
HDSe ⁷⁶	4-1759	3, 2, 2← 3, 2, 1	Ground					43 209.8	
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground	2		2		43 215.84	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					43 220.12	
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground	1		1		43 227.26	.2
Si ²⁸ F ₃ ¹⁹ H	4-1641	3, ← 2,	Ground					43 247.49	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2		2		43 274.56	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	3		2		43 285.5	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	1, 1, 0← 1, 0, 1	Ground	2		3		43 294.8	.2
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	2, 1, 2← 1, 1, 1						43 303.62	.27
(C ¹² H ₃) ₂ S ³²	3- 601	4, 2, 3← 4, 1, 4	Ground					43 321.37	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 2, 3← 4, 1, 4	Ground					43 322.18	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 2, 3← 4, 1, 4	Ground					43 322.98	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² D ₃ O ¹⁶ H	3- 214	Not Reported	Ground					43 325.0	.5
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2		3		43 338.16	.2
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						43 345.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	21, 5, ←20, 6,	Ground					43 346.58	
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	3		3		43 348.60	.2
F ¹⁹ DC ¹² O ¹⁶	4- 272	2, 0, 2← 1, 0, 1						43 361.9	.1
H ₂ C ¹² *O ¹⁶ C ¹² *H ₂	4- 841	8, 6, 2← 8, 5, 3	Ground					43 398.	1.
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	1		2		43 398.08	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	11, 4, ←12, 3,	Ground					43 404.8	
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2		2		43 413.60	.2
D ₂ O ¹⁶	4-1713	4, 2, 3← 3, 3, 0	Ground					43 414.57	
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	0		1		43 416.10	.2
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	2, 0, 2← 1, 0, 1	Ground					43 421.36	.20
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	3		2		43 423.60	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	1		1		43 428.72	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2		1		43 444.10	.2
(C ¹² H ₃) ₂ O ¹⁶	3- 591	6, 1, 5← 6, 0, 5	Ground					43 450.	20.
C ¹² D ₃ O ¹⁶ H	3- 214	2, , ← 1, ,	Ground					43 453.7	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	10, 2, ← 9, 3,	Ground					43 498.32	
C ¹² D ₃ O ¹⁶ H	3- 214	5, , ← 4, ,	Ground					43 501.5	.5
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						43 525.	
(C ¹² H ₃) ₂ S ³²	3- 601	10, 3, 7←10, 2, 8	Ground					43 543.45	.05
(C ¹² H ₃) ₂ S ³²	3- 601	10, 3, 7←10, 2, 8	Ground					43 544.14	.05
(C ¹² H ₃) ₂ S ³²	3- 601	10, 3, 7←10, 2, 8	Ground					43 544.84	.05
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						43 545.	
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						43 630.	
(C ¹² H ₃) ₂ S ³²	3- 601	10, 2, 9← 9, 3, 6	Ground					43 636.47	.05
(C ¹² H ₃) ₂ S ³²	3- 601	10, 2, 9← 9, 3, 6	Ground					43 637.52	.05
(C ¹² H ₃) ₂ S ³²	3- 601	10, 2, 9← 9, 3, 6	Ground					43 638.57	.05
O ₃ ¹⁶	4-1841	12, 2,10←13, 1,13	Ground					43 654.	
C ¹² HD ₂ F ¹⁹	4- 466	1, 0, 1← 0, 0, 0	Ground					43 689.82	.1
Si ²⁸ HCl ³⁵ C ¹³⁷	4-1502	9, , ← 8, ,	Ground					43 690.	10.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					43 711.80	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					43 728.61	
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground					43 745.0	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 0, 2← 1, 0, 1	Ground	3		2		43 794.02	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 0, 2← 1, 0, 1	Ground	2		1		43 794.02	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 0, 2← 1, 0, 1	Ground	3		2		43 836.50	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 0, 2← 1, 0, 1	Ground	2		1		43 836.50	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 0, 2← 1, 0, 1	Ground	1		0		43 837.38	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 0, 2← 1, 0, 1	Ground	2		2		43 837.38	.10
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	7, 3, 5← 7, 2, 6	Ground					43 850.54	.05
C ¹² D ₃ O ¹⁶ D	3- 216	Not Reported						43 995.	
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	12, 6←11, 6	Ground					44 023.24	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	12, 5←11, 5	Ground					44 027.08	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	12, 4←11, 4	Ground		44 030.18	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	12, 3←11, 3	Ground		44 032.64	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	12, 2←11, 2	Ground		44 034.42	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	12, 1←11, 1	Ground		44 035.48	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1193	12, 0←11, 0	Ground		44 035.80	.1
HC ¹² O ¹⁶ O ¹⁸ H	3- 77	2, 1, 1← 1, 1, 0	Ground		44 056.8	.2
C ¹³ H ₃ O ¹⁶ D	3- 215	1, 0, 1← 0, 0, 0	Ground		44 076.55	.5
C ¹³ H ₃ O ¹⁶ D	3- 215	1, 0, 1← 0, 0, 0	Ground		44 079.30	.5
HC ¹² O ¹⁸ O ¹⁶ H	3- 76	2, 1, 1← 1, 1, 0	Ground		44 095.5	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported			44 100.	
C ¹² D ₃ C ¹² :C ¹² H	4-1052	3, 2← 2, 2	Ground		44 131.76	.1
C ¹² D ₃ C ¹² :C ¹² H	4-1052	3, 1← 2, 1	Ground		44 133.62	.1
C ¹² D ₃ C ¹² :C ¹² H	4-1052	3, 0← 2, 0	Ground		44 134.19	.1
C ¹³ H ₃ O ¹⁶ D	3- 215	1, 0, 1← 0, 0, 0	Ground		44 144.06	.5
C ¹³ H ₃ O ¹⁶ D	3- 215	1, 0, 1← 0, 0, 0	Ground		44 151.09	.5
C ¹² H ₂ DC ¹² :C ¹² D	4-1049	3, 1, 3← 2, 1, 2	Ground		44 154.10	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		44 188.60	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported			44 205.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported			44 214.	
C ¹³ H ₃ O ¹⁶ D	3- 215	1, 0, 1← 0, 0, 0	Ground		44 228.26	.5
C ¹³ H ₃ O ¹⁶ D	3- 215	1, 0, 1← 0, 0, 0	Ground		44 241.43	.5
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	1 1	44 242.08	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		44 286.76	
F ¹⁹ HC ¹² O ¹⁶	4- 271	2, 0, 2← 1, 0, 1			44 296.0	.1
C ¹² H ₂ DC ¹² :C ¹² D	4-1049	3, 2, 2← 2, 2, 1	Ground		44 315.24	.1
C ¹² H ₂ DC ¹² :C ¹² D	4-1049	3, 2, 1← 2, 2, 0	Ground		44 315.50	.1
C ¹² H ₂ DC ¹² :C ¹² D	4-1049	3, 0, 3← 2, 0, 2	Ground		44 317.72	.1
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	1 2	44 376.00	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2 1	44 429.74	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		44 462.1	
C ¹² H ₂ DC ¹² :C ¹² D	4-1049	3, 1, 2← 2, 1, 1	Ground		44 480.44	.1
Si ²⁸ HCl ₃ ³⁵	4-1501	9, ← 8,	Ground		44 500.	10.
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	1 2	44 515.28	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	1 1	44 545.80	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2 2	44 564.10	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground		44 573.06	
O ^b O ^b O ^b	4-1847	Not Reported			44 575.	
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2 3	44 627.20	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	1, 1, 0← 1, 0, 1	Ground	2 2	44 703.00	.2
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 9←10, 9	Ground		44 750.52	.1
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 4← 7, 2, 5	Ground		44 762.10	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 4← 7, 2, 5	Ground		44 762.99	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 4← 7, 2, 5	Ground		44 763.86	.05
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 7←10, 7	Ground		44 764.52	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 6←10, 6	Ground		44 770.20	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₂	F' ₁	F		
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 5←10, 5	Ground					44 775.04	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 4←10, 4	Ground					44 778.98	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 3←10, 3	Ground					44 782.02	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 2←10, 2	Ground					44 784.16	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 1←10, 1	Ground					44 785.48	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² H	4-1191	11, 0←10, 0	Ground					44 785.92	.1
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	2, 1, 1← 1, 1, 0	Ground					44 813.4	.6
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					44 826.66	
F ¹⁹ HC ¹³ O ¹⁶	4- 273	2, 1, 2← 1, 1, 1						44 827.2	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	2, 0, 2← 1, 0, 1						44 911.68	.28
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					44 967.40	
HC ¹² HO ¹⁶	4- 381	19, 3, 16←19, 3, 17	Ground					45 063.10	.1
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 2← 2, 2	Ground		3		3	45 145.20	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 2← 2, 2	Ground		4		3	45 145.20	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 2← 2, 2	Ground		2		3	45 145.20	
C ¹² H ₃ O ¹⁶ D	3- 212	1, 0, 1← 0, 0, 0	Ground					45 189.46	1.0
C ¹² H ₃ O ¹⁶ D	3- 212	1, 0, 1← 0, 0, 0	Ground					45 193.36	1.0
F ¹⁹ DC ¹² O ¹⁶	4- 272	2, 1, 1← 1, 1, 0						45 226.9	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 256.68	
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	2, 1, 1← 1, 1, 0	Ground					45 257.40	.20
C ¹² H ₃ O ¹⁶ D	3- 212	1, 0, 1← 0, 0, 0	Ground					45 259.44	1.
C ¹² H ₃ O ¹⁶ D	3- 212	1, 0, 1← 0, 0, 0	Ground					45 265.78	1.
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	13, 6←12, 6	Ground					45 284.10	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	13, 5←12, 5	Ground					45 287.88	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	13, 4←12, 4	Ground					45 291.10	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	13, 3←12, 3	Ground					45 293.56	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	13, 2←12, 2	Ground					45 295.30	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	13, 1←12, 1	Ground					45 296.40	.1
D ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1194	13, 0←12, 0	Ground					45 296.66	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 324.22	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 325.04	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 336.60	
C ¹² H ₃ O ¹⁶ D	3- 212	1, 0, 1← 0, 0, 0	Ground					45 344.30	1.
C ¹² H ₃ O ¹⁶ D	3- 212	1, 0, 1← 0, 0, 0	Ground					45 359.43	1.
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 9←10, 9	Ground					45 410.2	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 8←10, 8	Ground					45 417.5	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 7←10, 7	Ground					45 424.2	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 6←10, 6	Ground					45 429.98	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 5←10, 5	Ground					45 434.72	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 4←10, 4	Ground					45 438.66	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 3←10, 3	Ground					45 441.70	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 2←10, 2	Ground					45 443.90	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 1←10, 1	Ground					45 445.20	
H ₃ C ¹² C ¹² :C ¹² C ¹² N ¹⁴	4-1121	11, 0←10, 0	Ground					45 445.60	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 458.06	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² DCI ₃ ³⁵	4- 264	7, ← 6,	Ground					45 502.4	.15
F ¹⁹ HC ¹³ O ¹⁶	4- 273	2, 1, 1← 1, 1, 0						45 623.0	.1
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 1← 1, 1, 0	Ground	3		2		45 657.30	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 1← 1, 1, 0	Ground	1		0		45 657.30	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 1← 1, 1, 0	Ground	2		1		45 658.40	.10
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	8, 3, 5← 8, 4, 4	Ground					45 659.90	.05
F ¹⁹ HC ¹² O ¹⁶	4- 271	2, 1, 1← 1, 1, 0						45 676.8	.1
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	8, 8← 7, 8	Ground					45 688.54	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	8, 7← 7, 7	Ground					45 689.82	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	8, 6← 7, 6	Ground					45 690.72	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	8, 4← 7, 4	Ground					45 691.56	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	8, 3← 7, 3	Ground					45 692.16	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	8, 2← 7, 2	Ground					45 692.74	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	8, 1← 7, 1	Ground					45 692.94	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁵	4- 594	8, 0← 7, 0	Ground					45 692.94	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 9←10, 9	Ground	19/2		17/2		45 696.34	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11,10←10,10	Ground	25/2		23/2		45 699.46	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 8←10, 8	Ground	19/2		17/2		45 702.98	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 9←10, 9	Ground	25/2		23/2		45 704.58	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 7←10, 7	Ground	19/2		17/2		45 708.80	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 8←10, 8	Ground	25/2		23/2		45 709.20	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 7←10, 7	Ground	25/2		23/2		45 713.24	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 6←10, 6	Ground	19/2		17/2		45 713.80	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 6←10, 6	Ground	25/2		23/2		45 716.70	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 5←10, 5	Ground	19/2		17/2		45 718.16	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 5←10, 5	Ground	25/2		23/2		45 719.66	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 4←10, 4	Ground	19/2		17/2		45 721.66	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 4←10, 4	Ground	25/2		23/2		45 722.12	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 3←10, 3	Ground	25/2		23/2		45 723.84	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 3←10, 3	Ground	19/2		17/2		45 724.34	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 2←10, 2	Ground	25/2		23/2		45 725.18	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 1←10, 1	Ground	25/2		23/2		45 726.02	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 0←10, 0	Ground	23/2		21/2		45 726.26	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 0←10, 0	Ground	25/2		23/2		45 726.26	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 2←10, 2	Ground	19/2		17/2		45 726.26	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 1←10, 1	Ground	23/2		21/2		45 726.60	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 1←10, 1	Ground	19/2		17/2		45 727.50	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 2←10, 2	Ground	23/2		21/2		45 727.50	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 0←10, 0	Ground	21/2		19/2		45 727.88	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 0←10, 0	Ground	19/2		17/2		45 727.88	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 1←10, 1	Ground	21/2		19/2		45 728.12	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 2←10, 2	Ground	21/2		19/2		45 728.70	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 3←10, 3	Ground	23/2		21/2		45 729.10	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 3←10, 3	Ground	21/2		19/2		45 729.66	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 4←10, 4	Ground	21/2		19/2		45 731.06	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 4←10, 4	Ground	23/2		21/2		45 731.36	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 5←10, 5	Ground	21/2		19/2		45 732.88	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 5←10, 5	Ground	23/2		21/2		45 734.22	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 6←10, 6	Ground	21/2		19/2		45 735.00	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 7←10, 7	Ground	21/2		19/2		45 737.56	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 6←10, 6	Ground	23/2		21/2		45 737.66	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 8←10, 8	Ground	21/2		19/2		45 740.64	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 7←10, 7	Ground	23/2		21/2		45 741.90	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 9←10, 9	Ground	21/2		19/2		45 743.94	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 8←10, 8	Ground	23/2		21/2		45 746.74	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11,10←10,10	Ground	21/2		19/2		45 747.52	
C ¹² F ₃ ¹⁹ Br ⁸¹	4- 222	11, 9←10, 9	Ground	23/2		21/2		45 752.20	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 759.26	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 769.96	
C ¹² HD ₂ C ¹³⁵	4- 431	2, 1, 2← 1, 1, 1	Ground	7/2		5/2		45 789.	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 1, 6← 7, 1, 7						45 801.13	
HC ¹² HO ¹⁶	4- 381	28, 4,24←28, 4,25	Ground					45 835.58	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 865.08	
HC ¹³ HO ¹⁶	4- 382	4, 1, 3← 4, 1, 4	Ground					45 920.08	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 957.66	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	18, 6, ←19, 5,	Ground					45 958.	
C ¹² HD ₂ C ¹² :C ¹² H	4-1048	3, 1, 3← 2, 1, 2	Ground					45 986.74	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					45 994.56	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	14, 3, ←13, 4,	Ground					45 995.	
C ¹² HD ₂ C ¹³⁵	4- 431	2, 1, 2← 1, 0, 1	Ground					46 099.4	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 9←10, 9	Ground	19/2		17/2		46 121.20	
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	2, 1, 1← 1, 1, 0	Ground					46 122.6	.6
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 8←10, 8	Ground	19/2		17/2		46 128.96	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 9←10, 9	Ground	25/2		23/2		46 130.54	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 7←10, 7	Ground	19/2		17/2		46 135.84	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 8←10, 8	Ground	25/2		23/2		46 136.42	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 7←10, 7	Ground	25/2		23/2		46 141.18	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 6←10, 6	Ground	19/2		17/2		46 141.80	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 6←10, 6	Ground	25/2		23/2		46 145.34	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 5←10, 5	Ground	19/2		17/2		46 146.92	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 5←10, 5	Ground	25/2		23/2		46 148.76	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 4←10, 4	Ground	19/2		17/2		46 151.04	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 4←10, 4	Ground	25/2		23/2		46 151.52	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 3←10, 3	Ground	25/2		23/2		46 153.72	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 3←10, 3	Ground	19/2		17/2		46 154.28	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 2←10, 2	Ground	25/2		23/2		46 155.32	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 1←10, 1	Ground	25/2		23/2		46 156.28	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 2←10, 2	Ground	19/2		17/2		46 156.60	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 0←10, 0	Ground	25/2		23/2		46 156.60	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 0←10, 0	Ground	23/2		21/2		46 156.60	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 1←10, 1	Ground	23/2	21/2			46 156.98	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 2←10, 2	Ground	23/2	21/2			46 158.06	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 1←10, 1	Ground	19/2	17/2			46 158.06	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 0←10, 0	Ground	19/2	17/2			46 158.56	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 0←10, 0	Ground	21/2	19/2			46 158.56	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 1←10, 1	Ground	21/2	19/2			46 158.80	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 2←10, 2	Ground	21/2	19/2			46 159.50	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 3←10, 3	Ground	23/2	21/2			46 160.02	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 3←10, 3	Ground	21/2	19/2			46 160.70	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 4←10, 4	Ground	21/2	19/2			46 162.40	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 4←10, 4	Ground	23/2	21/2			46 162.68	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					46 163.84	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 5←10, 5	Ground	21/2	19/2			46 164.58	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 5←10, 5	Ground	23/2	21/2			46 166.14	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 6←10, 6	Ground	21/2	19/2			46 167.24	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 7←10, 7	Ground	21/2	19/2			46 170.44	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 6←10, 6	Ground	23/2	21/2			46 170.44	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 8←10, 8	Ground	21/2	19/2			46 173.94	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 7←10, 7	Ground	23/2	21/2			46 175.44	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 9←10, 9	Ground	21/2	19/2			46 177.98	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 8←10, 8	Ground	23/2	21/2			46 181.24	
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 9←10, 9	Ground	21/2	19/2			46 182.44	
C ¹³ HD ₂ C ¹² :C ¹² H	4-1048	3, 2, 2← 2, 2, 1	Ground					46 186.84	.1
C ¹² HD ₂ C ¹² :C ¹² H	4-1048	3, 2, 1← 2, 2, 0	Ground					46 187.46	.1
C ¹² F ₃ ¹⁹ Br ⁷⁹	4- 221	11, 9←10, 9	Ground	23/2	21/2			46 187.96	
C ¹² HD ₂ C ¹² :C ¹² H	4-1048	3, 0, 3← 2, 0, 2	Ground					46 189.01	.1
C ¹² HCl ₃ ³⁵	4- 261	7, ← 6,	Ground					46 227.2	.15
C ¹³ S ³²	1-	1← 0	Ground					46 247.472	.020
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 6←11, 6	Ground					46 298.32	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 5←11, 5	Ground					46 303.13	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 4←11, 4	Ground					46 307.07	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 3←11, 3	Ground					46 310.16	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 2←11, 2	Ground					46 312.36	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 1←11, 1	Ground					46 313.66	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 0←11, 0	Ground					46 314.11	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					46 368.42	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	Not Reported						46 386.78	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	Not Reported						46 387.80	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 1←11, 1	Excited					46 389.10	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 8←11, 8	Excited					46 389.94	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 6←11, 6	Excited					46 390.82	.1
C ¹² HD ₂ C ¹² :C ¹² H	4-1048	3, 1, 2← 2, 1, 1	Ground					46 391.00	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 7←11, 7	Excited					46 396.24	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 5←11, 5	Excited					46 396.90	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 3←11, 3	Excited					46 405.40	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 5←11, 5	Excited					46 405.40	.1
C ¹² HD ₂ Cl ³⁵	4- 431	2, 1, 1← 1, 1, 0	Ground		7/2		5/2	46 407.	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 2←11, 2	Excited					46 408.54	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 4←11, 4	Excited					46 408.54	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 3←11, 3	Excited					46 410.76	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 1←11, 1	Excited					46 410.76	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 0←11, 0	Excited					46 411.82	.1
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 2←11, 2	Excited					46 412.42	.1
S ₂ ³² O ¹⁶	4-1821	1, 1, 1← 0, 0, 0	Ground					46 421.6	
H ₃ C ¹² C ¹² :C ¹² C ¹² :C ¹² D	4-1192	12, 1←11, 1	Excited					46 436.04	.1
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground		5		5	46 503.6	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground		4		4	46 539.0	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					46 544.84	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	7, 3, ← 8, 2,	Ground					46 545.	
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground		3		3	46 560.0	.2
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground		2		2	46 571.0	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					46 575.18	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	2, 1, 1← 1, 1, 0						46 581.22	.29
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						46 610.	
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 1, 2← 1, 1, 0	Ground					46 685.8	.1
C ¹² H ₃ C ¹² :C ¹² D	4-1045	3, 2← 2, 2	Ground					46 725.32	.1
C ¹² H ₃ C ¹² :C ¹² D	4-1045	3, 1← 2, 1	Ground					46 727.86	.1
C ¹² H ₃ C ¹² :C ¹² D	4-1045	3, 0← 2, 0	Ground					46 728.72	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					46 771.70	
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground					46 786.6	
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 1, 2← 1, 1, 1	Ground					46 787.4	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 0, 2← 1, 0, 1	Ground					46 789.2	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 0, 2← 1, 0, 1	Ground					46 791.4	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 1, 1← 1, 1, 0	Ground					46 791.5	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 1, 2← 1, 1, 1	Ground					46 827.3	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					46 855.6	
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 1, 1← 1, 1, 0	Ground					46 895.1	.5
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 1, 2← 1, 1, 1	Ground					46 904.6	.1
P ³¹ F ₃ ¹⁹	4-1681	3, 1← 2, 1	Ground					46 918.82	.18
P ³¹ F ₃ ¹⁹	4-1681	3, 0← 2, 0	Ground					46 918.82	.18
P ³¹ F ₃ ¹⁹	4-1681	3, 2← 2, 2	Ground					46 919.02	.18
P ³¹ F ₃ ¹⁹	4-1681	3, ← 2,	Excited					46 940.	10.
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 0, 2← 1, 0, 1	Ground					46 940.1	.1
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 1, 1← 1, 1, 0	Ground					46 975.7	.1
C ¹² H ₂ DF ¹⁹	4- 465	1, 0, 1← 0, 0, 0	Ground					47 002.52	.1
P ³¹ F ₃ ¹⁹	4-1681	3, ← 2,	Excited					47 010.	10.
C ¹³ H ₃ O ¹⁶ H	3- 213	1, 0, 1← 0, 0, 0	Ground					47 019.5	1.0
C ¹³ H ₃ O ¹⁶ H	3- 213	1, 0, 1← 0, 0, 0	Ground					47 030.16	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					47 032.08	
P ³¹ F ₃ ¹⁹	4-1681	3, ← 2,	Excited					47 033.	10.

Isoptic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground	1		1		47 037.0	.2
P ³¹ F ₃ ¹⁹	4-1681	3, ← 2,	Excited					47 040.	10.
C ¹² H ₃ O ¹⁶ D	3- 212	Not Reported						47 052.	
C ¹² H ₃ P ³¹ H ₂	3- 271	2, 1, 1← 1, 1, 0	Ground					47 052.2	.1
Br ⁸¹ C ¹² N ¹⁵	4- 146	6← 5	Ground	15/2		13/2		47 058.19	.1
Br ⁸¹ C ¹² N ¹⁵	4- 146	6← 5	Ground	13/2		11/2		47 058.19	.1
Br ⁸¹ C ¹² N ¹⁵	4- 146	6← 5	Ground	9/2		7/2		47 064.86	.15
Br ⁸¹ C ¹² N ¹⁵	4- 146	6← 5	Ground	11/2		9/2		47 064.86	.15
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground	2		2		47 074.4	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					47 075.84	
C ¹³ H ₃ O ¹⁶ H	3- 213	Not Reported						47 080.	
C ¹³ H ₃ O ¹⁶ H	3- 213	1, 0, 1← 0, 0, 0	Ground					47 083.82	.5
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 2← 2, 2	Ground	3		2		47 087.39	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 2← 2, 2	Ground	2		2		47 087.39	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 2← 2, 2	Ground	4		3		47 088.69	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 2← 2, 2	Ground	2		3		47 088.69	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 2← 2, 2	Ground	3		3		47 088.69	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 1← 2, 1	Ground	3		3		47 089.43	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 0← 2, 0	Ground	3		3		47 089.43	
C ¹³ D ₃ C ¹³ N ¹⁴	4- 817	3, 2← 2, 2	Ground	2		1		47 089.43	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 1← 2, 1	Ground	4		3		47 090.41	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 1← 2, 1	Ground	2		1		47 090.41	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 0← 2, 0	Ground	4		3		47 091.05	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 0← 2, 0	Ground	3		2		47 091.05	
C ¹² D ₃ C ¹³ N ¹⁴	4- 817	3, 0← 2, 0	Ground	2		1		47 091.05	
C ¹³ H ₃ O ¹⁶ H	3- 213	1, 0, 1← 0, 0, 0	Ground					47 094.11	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 7← 7, 7	Ground	8		7		47 122.48	
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground	3		3		47 122.6	.2
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 7← 7, 7	Ground	9		8		47 123.48	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 7← 7, 7	Ground	7		6		47 123.60	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 6← 7, 6	Ground	8		7		47 123.88	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 6← 7, 6	Ground	9		8		47 124.58	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 6← 7, 6	Ground	7		6		47 124.68	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 5← 7, 5	Ground	9		8		47 125.62	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 5← 7, 5	Ground	7		6		47 125.62	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 4← 7, 4	Ground	8		7		47 126.07	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 4← 7, 4	Ground	7		6		47 126.46	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 4← 7, 4	Ground	9		8		47 126.46	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 3← 7, 3	Ground	8		7		47 126.83	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 3← 7, 3	Ground	7		6		47 127.02	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 3← 7, 3	Ground	9		8		47 127.02	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 2← 7, 2	Ground	8		7		47 127.44	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 2← 7, 2	Ground	7		6		47 127.44	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 2← 7, 2	Ground	9		8		47 127.44	
C ¹² F ₃ C ¹² N ¹⁴	4- 591	8, 1← 7, 1	Ground	9		8		47 127.74	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	8, 0← 7, 0	Ground	8		7		47 127.74	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	8, 0← 7, 0	Ground	7		6		47 127.74	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	8, 0← 7, 0	Ground	9		8		47 127.74	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	8, 1← 7, 1	Ground	7		6		47 127.74	
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	8, 1← 7, 1	Ground	8		7		47 127.74	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 2← 2, 2	Ground	3		2		47 143.85	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 2← 2, 2	Ground	2		2		47 143.85	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 1← 2, 1	Ground	3		3		47 146.00	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 2← 2, 2	Ground	2		1		47 146.00	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 0← 2, 0	Ground	3		3		47 146.00	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 1← 2, 1	Ground	3		2		47 146.68	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 1← 2, 1	Ground	4		3		47 147.00	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 1← 2, 1	Ground	2		1		47 147.00	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 0← 2, 0	Ground	2		1		47 147.60	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 0← 2, 0	Ground	4		3		47 147.60	
C ¹² D ₃ C ¹² N ¹⁴	4- 816	3, 0← 2, 0	Ground	3		2		47 147.60	
Cl ³⁷ O ₂ ¹⁶	4-1382	3, 1, 2← 3, 0, 3	Ground	4		4		47 175.7	.2
C ¹³ H ₃ O ¹⁶ H	3- 213	1, 0, 1← 0, 0, 0	Ground					47 205.20	.5
C ¹³ H ₃ O ¹⁶ H	3- 213	1, 0, 1← 0, 0, 0	Ground					47 209.63	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					47 239.84	
C ¹² H ₃ O ¹⁶ D	3- 212	Not Reported						47 266.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					47 334.60	
Br ⁷⁹ C ¹² N ¹⁵	4- 145	6← 5	Ground	13/2		11/2		47 334.84	.10
Br ⁷⁹ C ¹² N ¹⁵	4- 145	6← 5	Ground	15/2		13/2		47 334.84	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	18, 6, ←19, 5,	Ground					47 335.	
Br ⁷⁹ C ¹² N ¹⁵	4- 145	6← 5	Ground	9/2		7/2		47 342.44	.10
Br ⁷⁹ C ¹² N ¹⁵	4- 145	6← 5	Ground	11/2		9/2		47 342.44	.10
C ¹² H ₃ O ¹⁶ D	3- 212	Not Reported						47 346.	
C ¹² H ₃ O ¹⁶ D	3- 212	1, 0, 1← 0, 0, 0						47 359.7	
O ¹⁶ C ¹² S ³⁴	4- 523	4← 3	Ground					47 462.40	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					47 608.08	
(C ¹² H ₃) ₂ S ³²	3- 601	9, 2, 7← 9, 1, 8	Ground					47 641.04	.05
(C ¹² H ₃) ₂ S ³²	3- 601	9, 2, 7← 9, 1, 8	Ground					47 641.70	.05
(C ¹² H ₃) ₂ S ³²	3- 601	9, 2, 7← 9, 1, 8	Ground					47 642.37	.05
(C ¹² H ₃) ₂ S ³²	3- 601	11, 3, 8←11, 2, 9	Ground					47 653.80	.05
(C ¹² H ₃) ₂ S ³²	3- 601	11, 3, 8←11, 2, 9	Ground					47 654.47	.05
(C ¹² H ₃) ₂ S ³²	3- 601	11, 3, 8←11, 2, 9	Ground					47 655.14	.05
(C ¹² H ₃) ₂ O ¹⁶	3- 591	1, 1, 1← 0, 0, 0	Ground					47 675.4	.2
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground	5		5		47 697.2	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					47 732.44	
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground	4		4		47 739.8	.2
C ¹³ H ₃ O ¹⁶ H	3- 213	Not Reported						47 760.	
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground	3		3		47 764.6	.2
(C ¹² H ₃) ₂ S ³²	3- 601	6, 3, 3← 6, 2, 4	Ground					47 775.11	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 3, 3← 6, 2, 4	Ground					47 776.06	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
(C ¹² H ₃) ₂ S ³²	3- 601	6, 3, 3← 6, 2, 4	Ground					47 777.01	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground	2		2		47 778.2	.2
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						47 870.	
C ¹³ H ₃ O ¹⁶ H	3- 213	Not Reported						47 899.3	
HDS ³²	4-1727	10, 5, 5←10, 5, 6	Ground					47 905.36	.05
C ¹³ H ₃ O ¹⁶ H	3- 213	Not Reported						47 950.1	
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground					47 992.2	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						48 010.	
O ¹⁶ C ¹² S ³³	4- 522	4← 3	Ground	7/2		5/2		48 038.19	.10
O ¹⁶ C ¹² S ³³	4- 522	2← 1	Ground	5/2		3/2		48 038.19	.10
O ¹⁶ C ¹² S ³³	4- 522	4← 3	Ground	11/2		9/2		48 039.13	.10
O ¹⁶ C ¹² S ³³	4- 522	4← 3	Ground	9/2		7/2		48 039.13	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	7, 3, ← 8, 2,	Ground					48 082.	
C ¹² H ₃ O ¹⁶ H	3- 211	1, 0, 1← 0, 0, 0	Ground					48 178.0	1.
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					48 180.38	
C ¹² H ₃ O ¹⁶ H	3- 211	1, 0, 1← 0, 0, 0	Ground					48 192.12	.5
C ¹² S ³⁴	1-	1← 0	Ground					48 200.948	.006
O ¹⁶ C ¹² Se ⁸⁰	4- 547	6← 5	Ground					48 211.46	.03
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground	1		1		48 232.10	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					48 243.46	
C ¹² H ₃ O ¹⁶ H	3- 211	1, 0, 1← 0, 0, 0	Ground					48 247.89	.5
C ¹² H ₃ O ¹⁶ H	3- 211	1, 0, 1← 0, 0, 0	Ground					48 257.49	.5
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						48 260.	
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground	2		2		48 276.60	.2
HC ¹² HO ¹⁶	4- 381	4, 1, 3← 4, 1, 4	Ground					48 284.60	5
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground	3		3		48 336.0	.2
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	7, 3, 4← 7, 4, 3	Ground					48 346.65	.05
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	3, 1, 3← 2, 1, 2	Ground					48 346.90	.1
C ¹² H ₃ O ¹⁶ H	3- 211	1, 0, 1← 0, 0, 0	Ground					48 372.60	.5
C ¹² H ₃ O ¹⁶ H	3- 211	1, 0, 1← 0, 0, 0	Ground					48 377.09	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported						48 385.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					48 386.64	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	7, 3, ← 8, 2,	Ground					48 387.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	10, 1, ←10, 1,	Ground					48 392.46	
Cl ³⁵ O ₂ ¹⁶	4-1381	3, 1, 2← 3, 0, 3	Ground	4		4		48 398.20	.2
C ¹² H ₃ N ¹⁴ H ₂	3- 261	10, 1, ←10, 1,	Ground					48 400.26	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					48 404.06	
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						48 406.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					48 414.83	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	18, 6, ←19, 5,	Ground					48 415.	
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 4← 5, 1, 5	Ground					48 418.84	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 4← 5, 1, 5	Ground					48 419.72	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 2, 4← 5, 1, 5	Ground					48 420.60	.05
O ¹⁶ C ¹³ S ³²	4- 526	4← 3	Ground					48 494.76	.10
O ¹⁶ C ¹² S ³²	4- 521	4← 3	Excited					48 506.24	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F'	F ₁	F		
O ¹⁶ C ¹² Se ⁷⁸	4- 545	6← 5	Ground					48 508.88	.03
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 8← 8, 8	Ground					48 521.44	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 7← 8, 7	Ground					48 523.08	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 6← 8, 6	Ground					48 524.54	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 5← 8, 5	Ground					48 525.74	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 4← 8, 4	Ground					48 526.74	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 3← 8, 3	Ground					48 527.56	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 2← 8, 2	Ground					48 528.08	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 0← 8, 0	Ground					48 528.42	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² D	4- 874	9, 1← 8, 1	Ground					48 528.42	.10
C ¹³ H ₃ O ¹⁶ H	3- 213	1, 0, 1← 0, 0, 0						48 529.6	
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	3, 2, 2← 2, 2, 1	Ground					48 539.96	.1
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	3, 2, 1← 2, 2, 0	Ground					48 540.33	.1
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	3, 0, 3← 2, 0, 2	Ground					48 542.62	.1
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					48 547.14	
C ¹² S ³³	1-	1← 0	Ground		1/2		3/2	48 583.264	.010
Re ¹⁸⁷ O ₃ ¹⁶ CF ³⁷	4-1474	12, ←11,						48 584.6	
C ¹² S ³³	1-	1← 0	Ground		5/2		3/2	48 585.906	.010
C ¹² S ³³	1-	1← 0	Ground		3/2		3/2	48 589.068	.010
Br ⁸¹ C ¹³ N ¹⁴	4- 144	6← 5	Ground	13/2		11/2		48 592.37	.10
Br ⁸¹ C ¹³ N ¹⁴	4- 144	6← 5	Ground	15/2		13/2		48 592.37	.10
Br ⁸¹ C ¹³ N ¹⁴	4- 144	6← 5	Ground	11/2		9/2		48 598.93	.10
Br ⁸¹ C ¹³ N ¹⁴	4- 144	6← 5	Ground	9/2		7/2		48 598.93	.10
Re ¹⁸⁵ O ₃ ¹⁶ CF ³⁷	4-1472	12, ←11,	Ground					48 600.5	
HC ¹² HO ¹⁶	4- 381	11, 2, 9←11, 2,10	Ground					48 612.70	.1
C ¹² S ³²	1-	1← 0	Excited					48 635.912	.040
O ¹⁶ C ¹² S ³²	4- 521	4← 3	Ground					48 651.40	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						48 707.7	
O ¹⁶ C ¹² S ³²	4- 521	4← 3	Excited					48 710.80	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					48 715.82	
C ¹² H ₂ DC ¹² :C ¹² H	4-1047	3, 1, 2← 2, 1, 1	Ground					48 737.52	.1
O ¹⁶ C ¹² S ³²	4- 521	4← 3	Excited					48 761.55	.10
O ¹⁶ C ¹² S ³²	4- 521	4← 3	Excited					48 801.08	.10
O ^b O ^b O ^b	4-1847	Not Reported						48 806.	
O ¹⁶ C ¹² S ³²	4- 521	4← 3	Excited					48 819.92	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					48 857.40	
Br ⁷⁹ C ¹³ N ¹⁴	4- 143	6← 5	Ground	13/2		11/2		48 877.11	.10
Br ⁷⁹ C ¹³ N ¹⁴	4- 143	6← 5	Ground	15/2		13/2		48 877.11	.10
Br ⁷⁹ C ¹³ N ¹⁴	4- 143	6← 5	Ground	9/2		7/2		48 884.82	.10
Br ⁷⁹ C ¹³ N ¹⁴	4- 143	6← 5	Ground	11/2		9/2		48 884.82	.10
O ¹⁶ F ₂ ¹⁹	4-1611	9, 3, 6←10, 2, 9	Ground					48 919.17	.10
C ¹² S ³²	1-	1← 0	Ground					48 991.000	.006
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	15/2		13/2		49 021.91	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	9/2		9/2		49 021.91	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	13/2		11/2		49 021.91	.10

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	9/2	7/2			49 028.32	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	11/2	9/2			49 028.32	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						49 032.	
C ¹³ H ₃ O ¹⁶ H	3- 213	Not Reported						49 070.8	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	6, 4, 2← 6, 3, 3	Ground					49 072.09	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					49 085.76	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					49 086.38	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 7←15, 7	Ground	35/2	33/2			49 088.01	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 7←15, 7	Ground	29/2	27/2			49 088.01	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 6←15, 6	Ground	29/2	27/2			49 089.18	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 6←15, 6	Ground	35/2	33/2			49 089.18	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 5←15, 5	Ground	29/2	27/2			49 090.22	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 5←15, 5	Ground	35/2	33/2			49 090.22	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 4←15, 4	Ground	29/2	27/2			49 091.00	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 4←15, 4	Ground	35/2	33/2			49 091.00	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 3←15, 3	Ground	35/2	33/2			49 091.70	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 2←15, 2	Ground	33/2	31/2			49 092.38	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 1←15, 1	Ground	35/2	33/2			49 092.38	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 0←15, 0	Ground	35/2	33/2			49 092.38	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 0←15, 0	Ground	33/2	31/2			49 092.38	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 1←15, 1	Ground	33/2	31/2			49 092.38	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 2←15, 2	Ground	29/2	27/2			49 092.38	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 4←15, 4	Ground	33/2	31/2			49 092.88	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 2←15, 2	Ground	31/2	29/2			49 092.88	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 1←15, 1	Ground	29/2	27/2			49 092.88	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 1←15, 1	Ground	31/2	29/2			49 092.88	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 3←15, 3	Ground	33/2	31/2			49 092.88	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 0←15, 0	Ground	29/2	27/2			49 092.88	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 0←15, 0	Ground	31/2	29/2			49 092.88	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 3←15, 3	Ground	31/2	29/2			49 092.88	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 5←15, 5	Ground	33/2	31/2			49 093.60	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 5←15, 5	Ground	31/2	29/2			49 093.60	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 4←15, 4	Ground	31/2	29/2			49 093.60	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 6←15, 6	Ground	33/2	31/2			49 094.20	
Si ²⁸ F ₃ ¹⁹ Br ⁸¹	4- 92	16, 6←15, 6	Ground	31/2	29/2			49 094.20	
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	11/2	11/2			49 125.04	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	9/2	9/2			49 147.47	.15
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					49 148.90	
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	15/2	15/2	13/2	15/2	49 157.27	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	13/2	13/2	11/2	13/2	49 157.27	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	13/2	11/2			49 158.64	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	15/2	13/2			49 158.64	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	13/2	11/2	11/2	11/2	49 159.85	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	15/2	13/2	13/2	13/2	49 159.85	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	11/2	11/2	9/2	11/2	49 163.82	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	9/2	9/2	7/2	9/2	49 163.82	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	11/2		9/2		49 165.10	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	9/2		7/2		49 165.10	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	11/2	9/2	9/2	9/2	49 166.56	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	9/2	7/2	7/2	7/2	49 166.56	.15
O ¹⁶ F ₂ ¹⁹	4-1611	13, 4, 10←14, 3, 11	Ground					49 186.21	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	9/2		9/2		49 195.39	.15
C ¹² H ₃ N ¹⁴ H ₂	3- 261	10, 2, ← 9, 3,	Ground					49 229.64	
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	11/2		11/2		49 244.47	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	15/2		13/2		49 271.73	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	9/2		9/2		49 274.99	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	13/2		11/2		49 275.67	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	9/2		7/2		49 276.54	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	11/2		9/2		49 280.69	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	11/2		11/2		49 291.25	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Ground	13/2		13/2		49 301.67	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	15/2		13/2		49 302.27	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	13/2		11/2		49 302.27	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	9/2		7/2		49 310.06	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	11/2		9/2		49 310.06	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	15/2		13/2		49 318.15	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	13/2		11/2		49 322.08	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	9/2		7/2		49 323.03	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	11/2		9/2		49 327.08	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	13/2		11/2		49 385.48	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	15/2		13/2		49 385.48	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	9/2		7/2		49 391.95	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	11/2		9/2		49 391.95	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	11/2		11/2		49 398.90	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	9/2		9/2		49 403.74	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	13/2		13/2		49 404.69	.15
C ¹² H ₃ N ¹⁴ H ₂	3- 261	18, 6, ←19, 5,	Ground					49 426.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					49 426.06	
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	9/2		7/2		49 427.87	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	15/2		13/2		49 427.87	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	13/2	13/2	11/2	13/2	49 438.01	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	15/2	15/2	13/2	15/2	49 438.01	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	15/2		13/2		49 439.12	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	13/2		11/2		49 439.12	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	13/2	11/2	11/2	11/2	49 440.40	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	15/2	13/2	13/2	13/2	49 440.40	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	15/2		13/2		49 443.83	.20
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	11/2		9/2		49 444.30	.10
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	13/2		11/2		49 444.30	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	9/2	9/2	7/2	9/2	49 445.65	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	11/2	11/2	9/2	11/2	49 445.65	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	11/2		9/2		49 446.90	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	9/2		7/2		49 446.90	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	9/2	7/2	7/2	7/2	49 448.31	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	13/2		11/2		49 448.31	.20
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	11/2	9/2	9/2	9/2	49 448.31	.15
Br ⁸¹ C ¹² N ¹⁴	4- 142	6← 5	Excited	13/2		13/2		49 449.98	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	9/2		9/2		49 452.59	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	9/2		7/2		49 496.11	.20
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	11/2		9/2		49 501.09	.20
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	11/2		11/2		49 520.03	.15
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 1, 5← 4, 1, 4	Ground					49 541.22	.2
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 7← 9, 7	Ground		21/2		19/2	49 552.10	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	15/2		13/2		49 552.62	.10
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 7← 9, 7	Ground		19/2		17/2	49 552.70	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 6← 9, 6	Ground		21/2		19/2	49 553.12	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 6← 9, 6	Ground		19/2		17/2	49 553.54	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 5← 9, 5	Ground		21/2		19/2	49 554.10	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 5← 9, 5	Ground		19/2		17/2	49 554.10	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 4← 9, 4	Ground		19/2		17/2	49 554.70	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 4← 9, 4	Ground		21/2		19/2	49 554.70	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 8← 9, 8	Ground		23/2		21/2	49 555.20	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 3← 9, 3	Ground		21/2		19/2	49 555.20	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 7← 9, 7	Ground		23/2		21/2	49 555.20	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 3← 9, 3	Ground		19/2		17/2	49 555.20	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 1← 9, 1	Ground		19/2		17/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 1← 9, 1	Ground		23/2		21/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 4← 9, 4	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 2← 9, 2	Ground		19/2		17/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 7← 9, 7	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 5← 9, 5	Ground		23/2		21/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 5← 9, 5	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 1← 9, 1	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 2← 9, 2	Ground		21/2		19/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 2← 9, 2	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 0← 9, 0	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 4← 9, 4	Ground		23/2		21/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 6← 9, 6	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 0← 9, 0	Ground		19/2		17/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 0← 9, 0	Ground		23/2		21/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 2← 9, 2	Ground		23/2		21/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 9← 9, 9	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 8← 9, 8	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 3← 9, 3	Ground		23/2		21/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 6← 9, 6	Ground		23/2		21/2	49 555.72	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 3← 9, 3	Ground		17/2		15/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 0← 9, 0	Ground		21/2		19/2	49 555.72	
Si ²⁸ F ₃ ¹⁹ Cl ³⁵	4-1411	10, 1← 9, 1	Ground		21/2		19/2	49 555.72	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	13/2		11/2		49 557.49	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	9/2		7/2		49 558.32	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					49 560.00	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	11/2		9/2		49 563.28	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	11/2		11/2		49 567.45	.15
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 9←15, 9	Ground		35/2		33/2	49 591.66	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 8←15, 8	Ground		29/2		27/2	49 592.25	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 8←15, 8	Ground		35/2		33/2	49 593.00	
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 0, 5← 4, 0, 4	Ground					49 594.30	.2
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 7←15, 7	Ground		29/2		27/2	49 594.38	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 7←15, 7	Ground		35/2		33/2	49 594.38	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 6←15, 6	Ground		35/2		33/2	49 595.72	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 6←15, 6	Ground		29/2		27/2	49 595.72	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 5←15, 5	Ground		35/2		33/2	49 596.60	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 5←15, 5	Ground		29/2		27/2	49 596.60	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 4←15, 4	Ground		35/2		33/2	49 597.80	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 0←15, 0	Ground		29/2		27/2	49 597.80	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 3←15, 3	Ground		35/2		33/2	49 598.42	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 0←15, 0	Ground		31/2		31/2	49 599.22	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 0←15, 0	Ground		35/2		33/2	49 599.22	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 3←15, 3	Ground		29/2		27/2	49 599.22	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 2←15, 2	Ground		29/2		27/2	49 599.22	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 2←15, 2	Ground		31/2		29/2	49 599.22	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 1←15, 1	Ground		33/2		31/2	49 599.22	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 1←15, 1	Ground		35/2		33/2	49 599.22	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 2←15, 2	Ground		35/2		33/2	49 599.22	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	15/2		13/2		49 599.57	.10
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 4←15, 4	Ground		33/2		31/2	49 599.86	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 1←15, 1	Ground		31/2		29/2	49 599.86	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 1←15, 1	Ground		29/2		27/2	49 599.86	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 3←15, 3	Ground		31/2		29/2	49 599.86	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 3←15, 3	Ground		33/2		31/2	49 599.86	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 2←15, 2	Ground		31/2		29/2	49 599.86	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 0←15, 0	Ground		29/2		27/2	49 599.86	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 0←15, 0	Ground		31/2		29/2	49 599.86	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 4←15, 4	Ground		31/2		29/2	49 600.90	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 5←16, 5	Ground		31/2		29/2	49 600.90	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 5←16, 5	Ground		33/2		31/2	49 600.90	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 6←15, 6	Ground		33/2		31/2	49 601.56	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 6←15, 6	Ground		31/2		29/2	49 601.56	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 8←15, 8	Ground		33/2		31/2	49 603.30	
Si ²⁸ F ₃ ¹⁹ Br ⁷⁹	4- 91	16, 9←15, 9	Ground		31/2		29/2	49 603.30	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	13/2	11/2			49 604.35	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	9/2	7/2			49 605.29	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Ground	13/2	13/2			49 610.43	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	11/2	9/2			49 610.43	.15
O ¹⁶ F ₂ ¹⁹	4-1611	1, 1, 0← 1, 0, 1	Ground					49 613.55	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					49 614.02	
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 2, 4← 4, 2, 3	Ground					49 616.02	.2
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 4, 2← 4, 4, 1	Ground					49 621.46	.2
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 4, 1← 4, 4, 0	Ground					49 621.46	.2
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 3, 3← 4, 3, 2	Ground					49 623.16	.2
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 3, 2← 4, 3, 1	Ground					49 623.16	.2
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 2, 3← 4, 2, 2	Ground					49 640.22	.2
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	13/2	11/2			49 666.19	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	15/2	13/2			49 666.19	.10
C ¹² D ₃ N ¹⁴ C ¹³	4- 836	3, 2← 2, 2	Ground					49 668.07	
C ¹² D ₃ N ¹⁴ C ¹³	4- 836	3, 1← 2, 1	Ground					49 670.43	
C ¹² D ₃ N ¹⁴ C ¹³	4- 836	3, 0← 2, 0	Ground					49 671.19	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	9/2	7/2			49 673.93	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	11/2	9/2			49 673.93	.10
C ¹² H ₂ DC ¹² F ₃ ¹⁹	3- 412	5, 1, 4← 4, 1, 3	Ground					49 685.20	.2
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	9/2	7/2			49 709.00	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	15/2	13/2			49 709.00	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	13/2	13/2			49 712.00	.15
C ¹³ H ₃ F ¹⁹	4- 463	1, 0← 0, 0	Ground					49 724.73	.18
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	11/2	9/2			49 728.46	.10
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	13/2	11/2			49 728.46	.10
C ¹² H ₃ O ¹⁶ H	3- 211	Not Reported						49 750.	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	6← 5	Excited	13/2	13/2			49 757.39	.15
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	4, 1, 4← 3, 0, 3	Ground					49 860.8	.5
C ¹² H ₃ O ¹⁶ H	3- 211	1, 0, 1← 0, 0, 0						49 867.2	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	4, 1, 4← 3, 0, 3	Ground					49 870.9	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					49 874.58	
F ₂ ¹⁹ O ₂ ¹⁶	3- 11	4, 1, 4← 3, 0, 3	Ground					49 880.2	.5
C ¹² H ₃ N ¹⁴ H ₂	3- 261	7, 3, ← 8, 2,	Ground					49 915.	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					49 952.46	
N ¹⁴ H ₂ D	4-1773	2, 1, 2← 2, 0, 2	Ground					49 962.85	.10
O ¹⁶ F ₂ ¹⁹	4-1611	33, 6.28←32, 7.25	Ground					50 198.50	.10
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	6, 3, 3← 6, 4, 2	Ground					50 212.06	.05
HDO ¹⁶	4-1712	3, 2, 1← 3, 2, 2	Ground					50 236.30	
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	2	0	1	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	2	2	3	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	3	2	2	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	3	2	3	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	2	2	1	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	2	2	2	50 245.63	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	0	0	1	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	1	2	2	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	1	0	1	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	1	2	1	50 245.63	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	1	2	1	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	0	2	1	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	1	2	2	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	2	1	1	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	3	1	2	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	3	3	2	3	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	2	2	2	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	3	2	2	3	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	2	1	2	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	2	2	1	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	3	2	2	1	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	2	2	3	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	3	3	2	2	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	1	1	1	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	3	2	2	2	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	3	4	2	3	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	1	1	2	50 246.03	.10
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	2	1	1	0	50 246.03	.10
Re ¹⁸⁷ O ₃ ¹⁶ Cl ³⁵	4-1473	12, ←11,						50 246.1	
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	1	1	0	50 246.53	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	1	1	1	50 246.53	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	2	1	1	50 246.53	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	2	1	2	50 246.53	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	1	1	2	50 246.53	.15
N ₂ ¹⁴ O ¹⁶	4-1811	2← 1	Ground	1	0	1	1	50 246.53	.15
Re ¹⁸⁵ O ₃ ¹⁶ Cl ³⁵	4-1471	12, ←11,						50 261.4	
O ¹⁶ F ₂ ¹⁹	4-1611	18, 5,13←19, 4,16	Ground					50 393.23	.10
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					50 399.24	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					50 423.40	
(C ¹² H ₃) ₂ S ³²	3- 601	7, 1, 6← 7, 0, 7	Ground					50 547.58	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 1, 6← 7, 0, 7	Ground					50 548.33	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 1, 6← 7, 0, 7	Ground					50 549.11	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					50 558.60	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					50 658.48	
(C ¹² H ₃) ₂ S ³²	3- 601	5, 3, 2← 5, 2, 3	Ground					50 797.50	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 3, 2← 5, 2, 3	Ground					50 798.49	.05
(C ¹² H ₃) ₂ S ³²	3- 601	5, 3, 2← 5, 2, 3	Ground					50 799.48	.05
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					50 875.60	
HDS ³⁴	4-1729	1, 1, 0← 1, 1, 1	Ground					50 912.27	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					50 934.64	
C ¹² H ₃ N ¹⁴ H ₂	3- 261	Not Reported	Ground					51 048.46	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁ '	F'	F ₁	F		
C ¹² H ₃ F ¹⁹	4- 461	1, 0← 0, 0	Ground					51 071.98	
HDS ³²	4-1727	1, 1, 0← 1, 1, 1	Ground					51 073.27	.05
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	6, 4, 3← 6, 3, 4	Ground					51 109.94	.05
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 2← 2, 2	Ground					51 270.86	.10
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 1← 2, 1	Ground					51 273.76	.10
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 0← 2, 0	Ground					51 274.75	.10
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 1← 2, 1	Excited					51 280.45	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 2← 2, 2	Excited					51 296.33	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 1← 2, 1	Excited					51 304.05	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 2← 2, 2	Excited					51 305.93	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 0← 2, 0	Excited					51 307.53	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 1← 2, 1	Excited					51 334.81	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 1← 2, 1	Excited					51 369.12	
O ¹⁶ F ₂ ¹⁹	4-1611	2, 1, 1← 2, 0, 2	Ground					51 388.95	.10
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 2← 2, 2	Excited					51 410.51	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 1← 2, 1	Excited					51 415.35	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 2← 2, 2	Excited					51 418.23	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 0← 2, 0	Excited					51 418.75	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	3, 1← 2, 1	Excited					51 469.85	
C ¹² D ₃ N ¹⁴ C ¹²	4- 834	3, 2← 2, 2	Ground					51 487.84	.15
C ¹² D ₃ N ¹⁴ C ¹²	4- 834	3, 1← 2, 1	Ground					51 490.24	.15
C ¹² D ₃ N ¹⁴ C ¹²	4- 834	3, 0← 2, 0	Ground					51 491.04	.15
O ¹⁶ F ₂ ¹⁹	4-1611	20, 3, 18←19, 4, 15	Ground					51 747.90	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 8← 8, 8	Ground					51 795.10	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 7← 8, 7	Ground					51 796.78	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 6← 8, 6	Ground					51 798.26	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 5← 8, 5	Ground					51 799.56	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 4← 8, 4	Ground					51 800.54	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 3← 8, 3	Ground					51 801.32	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 2← 8, 2	Ground					51 801.90	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 0← 8, 0	Ground					51 802.26	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 1← 8, 1	Ground					51 802.26	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 1← 8, 1	Excited					51 869.14	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 8← 8, 8	Excited					51 890.62	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 7← 8, 7	Excited					51 892.88	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 6← 8, 6	Excited					51 894.95	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 2← 8, 2	Excited					51 896.86	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 7← 8, 7	Excited					51 897.63	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 4← 8, 4	Excited					51 898.61	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 6← 8, 6	Excited					51 898.61	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 3← 8, 3	Excited					51 899.44	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 5← 8, 5	Excited					51 899.44	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 4← 8, 4	Excited					51 899.99	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 3← 8, 3	Excited					51 899.99	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 2← 8, 2	Excited					51 901.68	.20

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 1← 8, 1	Excited					51 903.42	.20
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 0← 8, 0	Excited					51 906.64	.20
O ¹⁶ F ₂ ¹⁹	4-1611	24, 4,21←23, 5,18	Ground					51 911.88	.10
C ¹² F ₃ ¹⁹ C ¹² :C ¹² H	4- 871	9, 1← 8, 1	Excited					51 934.48	.20
N ¹⁵ O ₂ ¹⁶	4-1802	10, 0,10← 9, 1, 9	Ground					52 109.4	
N ¹⁵ O ₂ ¹⁶	4-1802	10, 0,10← 9, 1, 9	Ground					52 110.4	
N ¹⁵ O ₂ ¹⁶	4-1802	10, 0,10← 9, 1, 9	Ground					52 149.8	
Cl ³⁷ F ¹⁹ C ¹² O ¹⁶	4- 152	7, 3, 5← 7, 4, 4	Ground					52 207.15	.05
O ¹⁶ F ₂ ¹⁹	4-1611	23, 4,19←22, 5,18	Ground					52 223.40	.10
O ¹⁶ F ₂ ¹⁹	4-1611	8, 3, 6← 9, 2, 7	Ground					52 302.40	.10
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	8, 4, 5← 8, 3, 6	Ground					52,320.30	.05
N ¹⁵ O ₂ ¹⁶	4-1802	10, 0,10← 9, 1, 9	Ground					52 398.4	
N ¹⁵ O ₂ ¹⁶	4-1802	10, 0,10← 9, 1, 9	Ground					52 419.2	
O ¹⁶ F ₂ ¹⁹	4-1611	32, 8,25←33, 7,26	Ground					52 643.25	.10
O ¹⁶ F ₂ ¹⁹	4-1611	28, 5,23←27, 6,22	Ground					52 676.00	.10
HDS ³⁴	4-1729	3, 2, 1← 3, 2, 2	Ground					52 979.67	
O ¹⁶ F ₂ ¹⁹	4-1611	32, 8,24←33, 7,27	Ground					52 988.75	.10
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 1, 3← 2, 1, 2	Ground					53 077.6	.3
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 1, 3← 2, 1, 2	Excited					53 132.4	.3
(C ¹² H ₃) ₂ S ³²	3- 601	4, 3, 1← 4, 2, 2	Ground					53 188.71	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 3, 1← 4, 2, 2	Ground					53 189.22	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 3, 1← 4, 2, 2	Ground					53 189.91	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 3, 1← 4, 2, 2	Ground					53 190.85	.05
HDS ³²	4-1727	3, 2, 1← 3, 2, 2	Ground					53 200.93	.05
S ³² O ₂ ¹⁶	4-1831	2, 1, 1← 2, 0, 2	Ground					53 529.16	.16
O ₂ ¹⁶	1-	25,25←24,25	Ground					53 599.4	.8
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 2, 1← 2, 2, 0	Excited					53 652.0	.3
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 2, 2← 2, 2, 1	Ground					53 672.8	.3
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 2, 1← 2, 2, 0	Ground					53 672.8	.3
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 0, 3← 2, 0, 2	Ground					53 694.8	.3
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 2, 2← 2, 2, 1	Excited					53 702.1	.1
O ¹⁶ F ₂ ¹⁹	4-1611	13, 2,11←12, 3,10	Ground					53 708.85	.10
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 0, 3← 2, 0, 2	Excited					53 712.2	.3
O ¹⁶ F ₂ ¹⁹	4-1611	18, 3,15←17, 4,14	Ground					53 739.10	.10
O ₂ ¹⁶	1-	23,23←22,23	Ground					54 129.4	.4
O ¹⁶ F ₂ ¹⁹	4-1611	3, 1, 2← 3, 0, 3	Ground					54 137.05	.10
N ¹⁵ S ³² F ₃ ¹⁹	4-1664	6, ← 5,	Ground					54 241.76	
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 1, 2← 2, 1, 1	Ground					54 313.6	.3
D ₂ N ¹⁴ C ¹² N ¹⁴	4- 363	3, 1, 2← 2, 1, 1	Excited					54 334.4	.3
(C ¹² H ₃) ₂ S ³²	3- 601	12, 3, 9←12, 2,10	Ground					54 439.22	.05
(C ¹² H ₃) ₂ S ³²	3- 601	12, 3, 9←12, 2,10	Ground					54 439.92	.05
(C ¹² H ₃) ₂ S ³²	3- 601	12, 3, 9←12, 2,10	Ground					54 440.61	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 6, 1, 6	Ground					54 518.60	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 6, 1, 6	Ground					54 519.54	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 2, 5← 6, 1, 6	Ground					54 520.48	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc: ±MHz
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground	7/2	5/2			55 055.8	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground	9/2	7/2			55 075.2	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground	13/2	11/2			55 090.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground	11/2	9/2			55 104.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground					55 112.7	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground	11/2	9/2			55 113.0	
Si ²⁸ F ₃ ¹⁹ D	4-1642	4, ← 3,	Ground					55 119.4	1.
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground	9/2	7/2			55 126.8	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground	7/2	5/2			55 135.8	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 0, 5← 4, 1, 4	Ground	13/2	11/2			55 138.8	
O ¹⁶ F ₂ ¹⁹	4-1611	33, 6,27←32, 7,26	Ground					55 170.63	.10
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, ← 2,	Ground					55 187.8	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, ← 2,	Ground					55 192.8	
O ₂ ¹⁶	1-	19,19←18,19	Ground					55 221.6	.4
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, 1← 2, 1	Excited					55 307.0	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, 2← 2, 2	Excited					55 344.9	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, 0← 2, 0	Excited					55 353.0	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, 1← 2, 1	Excited					55 353.0	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, 2← 2, 2	Excited					55 359.5	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, 1← 2, 1	Excited					55 412.5	
D ₂ O ¹⁶	4-1713	4, 4, 0← 5, 3, 3	Ground					55 482.32	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	3, ← 2,	Excited					55 519.4	
N ¹⁴ S ³⁴ F ₃ ¹⁹	4-1663	6, ← 5,	Ground					55 563.27	
N ¹⁴ S ³³ F ₃ ¹⁹	4-1662	6, ← 5,	Ground					55 598.35	
N ¹⁴ S ³² F ₃ ¹⁹	4-1661	6, ← 5,	Ground					55 633.94	
O ₂ ¹⁶	1-	17,17←16,17	Ground					55 784.6	.4
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	6, 3, 3← 5, 3, 2	Ground					55 833.34	.05
O ¹⁶ C ¹² Se ⁸²	4- 548	7← 6	Ground					55 916.19	.03
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground	13/2	11/2			56 011.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground	11/2	9/2			56 053.8	
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 1, 3← 2, 1, 2	Ground					56 061.0	.3
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 1, 3← 2, 1, 2	Excited					56 083.8	.3
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground	9/2	7/2			56 085.4	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground	7/2	5/2			56 103.6	
O ¹⁶ C ¹² Se ⁸⁰	4- 547	7← 6	Ground					56 246.47	.03
O ₂ ¹⁶	1-	1, 1← 2, 1	Ground					56 265.4	.6
(C ¹² H ₃) ₂ S ³²	3- 601	12, 4, 8←12, 3, 9	Ground					56 285.75	.05
(C ¹² H ₃) ₂ S ³²	3- 601	12, 4, 8←12, 3, 9	Ground					56 286.69	.05
(C ¹² H ₃) ₂ S ³²	3- 601	12, 4, 8←12, 3, 9	Ground					56 287.63	.05
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground					56 330.8	
O ₂ ¹⁶	1-	15,15←14,15	Ground					56 364.1	.4
(C ¹² H ₃) ₂ S ³²	3- 601	4, 3, 2← 4, 2, 3	Ground					56 459.09	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 3, 2← 4, 2, 3	Ground					56 459.59	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 3, 2← 4, 2, 3	Ground					56 460.57	.05
(C ¹² H ₃) ₂ S ³²	3- 601	4, 3, 2← 4, 2, 3	Ground					56 461.78	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁	F'	F ₁	F		
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 2, 2← 2, 2, 1	Excited					56 542.0	.3
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 2, 1← 2, 2, 0	Excited					56 542.0	.3
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 2, 1← 2, 2, 0	Ground					56 576.0	.3
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 2, 2← 2, 2, 1	Ground					56,576.0	.3
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground		7/2		5/2	56 576.9	
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 0, 3← 2, 0, 2	Ground					56 583.1	.3
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 0, 3← 2, 0, 2	Excited					56 583.1	.3
O ¹⁶ C ¹² Se ⁷⁸	4- 545	7← 6	Ground					56 593.16	.03
O ¹⁶ F ₂ ¹⁹	4-1611	38, 7,32←37, 8,29	Ground					56 600.15	.10
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground		9/2		7/2	56 623.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground		11/2		9/2	56 674.6	
Cl ³⁵ O ₂ ¹⁶	4-1381	5, 1, 4← 5, 0, 5	Ground		13/2		11/2	56 723.0	
O ₂ ¹⁶	1-	13,13←12,13	Ground					56 970.8	.4
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 1, 2← 2, 1, 1	Excited					57 086.0	.3
HDN ¹⁴ C ¹² N ¹⁴	4- 362	3, 1, 2← 2, 1, 1	Ground					57 105.2	.3
O ¹⁶ F ₂ ¹⁹	4-1611	3, 2, 2← 4, 1, 3	Ground					57 457.10	.10
O ₂ ¹⁶	1-	11,11←10,11	Ground					57 611.4	.2
N ¹⁴ D ₂ H	4-1774	1, 1, 1← 1, 0, 1	Ground					57 674.76	.15
(C ¹² H ₃) ₂ S ³²	3- 601	10, 2, 8←10, 1, 9	Ground					57 887.28	.05
(C ¹² H ₃) ₂ S ³²	3- 601	10, 2, 8←10, 1, 9	Ground					57 888.07	.05
(C ¹² H ₃) ₂ S ³²	3- 601	10, 2, 8←10, 1, 9	Ground					57 888.86	.05
O ¹⁶ F ₂ ¹⁹	4-1611	4, 1, 3← 4, 0, 4	Ground					57 958.30	.10
O ¹⁶ F ₂ ¹⁹	4-1611	27, 7,21←28, 6,22	Ground					58 013.45	.10
O ¹⁶ F ₂ ¹⁹	4-1611	13, 4, 9←14, 3,12	Ground					58 183.80	.10
O ¹⁶ O ¹⁸	1-	9, 9← 8, 9	Ground					58 310.	2.
O ₂ ¹⁶	1-	9, 9← 8, 9	Ground					58 323.885	.010
O ₂ ¹⁶	1-	3, 3← 4, 3	Ground					58 446.580	.010
N ¹⁵ O ₂ ¹⁶	4-1802	5, 1, 5← 6, 0, 6	Ground					58 583.23	
O ¹⁶ O ¹⁸	1-	3, 3← 4, 3	Ground					58 650.	2.
N ¹⁵ O ₂ ¹⁶	4-1802	5, 1, 5← 6, 0, 6	Ground					58 650.08	
O ¹⁶ O ¹⁸	1-	8, 8← 7, 8	Ground					58 670.	2.
O ¹⁶ F ₂ ¹⁹	4-1611	5, 0, 5← 4, 1, 4	Ground					58 725.50	.10
O ¹⁶ F ₂ ¹⁹	4-1611	27, 7,20←28, 6,23	Ground					58 772.25	.10
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 1, 7← 8, 1, 8						58 815.46	
O ¹⁶ F ₂ ¹⁹	4-1611	38, 7,31←37, 8,30	Ground					58 879.50	.10
O ₂ ¹⁸	1-	3, 3← 4, 3	Ground					58 900.	2.
O ₂ ¹⁸	1-	7, 7← 6, 7	Ground					58 965.	2.
O ¹⁶ O ¹⁸	1-	7, 7← 6, 7	Ground					59 075.	2.
O ¹⁶ F ₂ ¹⁹	4-1611	17, 2,15←18, 1,18	Ground					59 137.55	.10
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 1← 1, 1, 0	Ground					59 144.77	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 1← 1, 1, 0	Ground					59 144.89	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 1← 1, 1, 0	Ground					59 145.58	.05
(C ¹² H ₃) ₂ S ³²	3- 601	2, 2, 1← 1, 1, 0	Ground					59 146.32	.05
O ₂ ¹⁶	1-	7, 7← 6, 7	Ground					59 164.215	.010
(C ¹² H ₃) ₂ S ³²	3- 601	11, 4, 7←11, 3, 8	Ground					59 181.48	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
(C ¹² H ₃) ₂ S ³²	3- 601	11, 4, 7←11, 3, 8	Ground					59 182.54	.05
(C ¹² H ₃) ₂ S ³²	3- 601	11, 4, 7←11, 3, 8	Ground					59 183.59	.05
O ¹⁶ O ¹⁸	1-	4, 4← 5, 4	Ground					59 220.	2.
S ³² O ₂ ¹⁶	4-1831	4, 1, 3← 4, 0, 4	Ground					59 225.00	.07
O ¹⁶ O ¹⁷	1-	4, 4← 5, 4	Ground	11/2		13/2		59 250.	
O ¹⁶ O ¹⁷	1-	7, 7← 6, 7	Ground	11/2		9/2		59 322.	
O ¹⁶ O ¹⁷	1-	5, 5← 6, 5	Ground	5/2		7/2		59 359.	
O ¹⁶ O ¹⁷	1-	6, 6← 5, 6	Ground	17/2		15/2		59 385.	
O ¹⁶ O ¹⁷	1-	7, 7← 6, 7	Ground	9/2		7/2		59 390.	
O ¹⁶ O ¹⁷	1-	4, 4← 5, 4	Ground	13/2		15/2		59 398.	
N ¹⁵ O ₂ ¹⁶	4-1802	5, 1, 5← 6, 0, 6	Ground					59 411.47	
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 1← 2, 0, 2	Ground	2		2		59 418.76	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 1← 2, 0, 2	Ground	1		1		59 418.76	.10
C ¹² H ₂ N ¹⁴ O ¹⁶ H	3- 141	2, 1, 1← 2, 0, 2	Ground	3		3		59 418.76	.10
O ¹⁶ O ¹⁷	1-	5, 5← 6, 5	Ground	7/2		9/2		59 431.	
N ¹⁵ O ₂ ¹⁶	4-1802	5, 1, 5← 6, 0, 6	Ground					59 457.01	
O ¹⁶ O ¹⁷	1-	6, 6← 5, 6	Ground	15/2		13/2		59 519.	
O ¹⁶ O ¹⁷	1-	5, 5← 6, 5	Ground	9/2		11/2		59 519.	
O ¹⁶ O ¹⁸	1-	6, 6← 5, 6	Ground					59 540.	2.
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	3, 1, ← 2, 1,	Excited					59 569.6	.4
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	3, 1, ← 2, 1,	Ground					59 586.8	.4
(C ¹² H ₃) ₂ S ³²	3- 601	6, 3, 4← 6, 2, 5	Ground					59 588.00	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 3, 4← 6, 2, 5	Ground					59 589.10	.05
(C ¹² H ₃) ₂ S ³²	3- 601	6, 3, 4← 6, 2, 5	Ground					59 590.19	.05
O ₂ ¹⁶	1-	5, 5← 6, 5	Ground					59 590.978	.010
O ¹⁶ O ¹⁷	1-	5, 5← 6, 5	Ground	11/2		13/2		59 627.	
O ¹⁶ O ¹⁷	1-	6, 6← 5, 6	Ground	13/2		11/2		59 638.	
O ¹⁶ O ¹⁸	1-	5, 5← 6, 5	Ground					59 685.	2.
O ¹⁶ O ¹⁷	1-	6, 6← 5, 6	Ground	11/2		9/2		59 737.	
O ¹⁶ O ¹⁷	1-	5, 5← 6, 5	Ground	13/2		15/2		59 748.	
O ¹⁶ O ¹⁷	1-	6, 6← 7, 6	Ground	7/2		9/2		59 790.	
O ₂ ¹⁸	1-	5, 5← 6, 5	Ground					59 810.	2.
C ¹² H ₃ I ¹²⁷	4- 481	4, 3← 3, 3	Ground	11/2		9/2		59 819.35	.2
C ¹² H ₃ I ¹²⁷	4- 481	4, 3← 3, 3	Ground	9/2		7/2		59 832.75	.2
O ¹⁶ F ₂ ¹⁹	4-1611	4, 2, 2← 5, 1, 5	Ground					59 846.20	.10
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	3, 2, ← 2, 2,	Excited					59 848.8	.4
O ¹⁶ O ¹⁷	1-	6, 6← 7, 6	Ground	9/2		11/2		59 864.	
O ₂ ¹⁸	1-	5, 5← 4, 5	Ground					59 875.	2.
O ¹⁶ O ¹⁷	1-	5, 5← 6, 5	Ground	15/2		17/2		59 889.	
C ¹² H ₃ I ¹²⁷	4- 481	4, 2← 3, 2	Ground	9/2		7/2		59 922.75	.2
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	3, 0, ← 2, 0,	Excited					59 937.6	.4
C ¹² H ₃ I ¹²⁷	4- 481	4, 2← 3, 2	Ground	11/2		9/2		59 937.75	.2
C ¹² H ₃ I ¹²⁷	4- 481	4, 1← 3, 1	Ground	7/2		5/2		59 955.05	.2
O ¹⁶ O ¹⁷	1-	6, 6← 7, 6	Ground	11/2		13/2		59 956.	
C ¹² H ₃ I ¹²⁷	4- 481	4, 1← 3, 1	Ground	5/2		3/2		59 965.	.1.

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	3, 2, ← 2, 2,	Ground					59 973.0	.4
C ¹² H ₃ I ¹²⁷	4- 481	4, 1← 3, 1	Ground	9/2		7/2		59 975.55	.2
C ¹² H ₃ I ¹²⁷	4- 481	4, 2← 3, 2	Ground	7/2		5/2		59 975.55	.2
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	3, 0, ← 2, 0,	Ground					59 986.0	.4
O ¹⁶ O ¹⁷	1-	5, 5← 4, 5	Ground	15/2		13/2		59 989.	
C ¹² H ₃ I ¹²⁷	4- 481	4, 1← 3, 1	Ground	11/2		9/2		60 010.55	.2
C ¹² H ₃ I ¹²⁷	4- 481	4, 3← 3, 3	Ground	7/2		5/2		60 011.95	.2
C ¹² H ₃ I ¹²⁷	4- 481	4, 1← 3, 1	Ground	13/2		11/2		60 036.35	.2
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	3, 1, 3← 2, 1, 2	Ground					60 057.92	
C ¹² H ₃ I ¹²⁷	4- 481	4, 2← 3, 2	Ground	5/2		3/2		60 059.75	.2
O ¹⁶ O ¹⁷	1-	6, 6← 7, 6	Ground	13/2		15/2		60 060.	
C ¹² H ₃ I ¹²⁷	4- 481	4, 2← 3, 2	Ground	13/2		11/2		60 076.05	.2
O ¹⁶ O ¹⁷	1-	5, 5← 4, 5	Ground	13/2		11/2		60 130.	
C ¹² H ₃ I ¹²⁷	4- 481	4, 3← 3, 3	Ground	13/2		11/2		60 141.55	.2
O ¹⁶ O ¹⁷	1-	7, 7← 8, 7	Ground	9/2		11/2		60 170.	
O ¹⁶ O ¹⁷	1-	6, 6← 7, 6	Ground	15/2		17/2		60 180.	
O ¹⁶ O ¹⁷	1-	5, 5← 4, 5	Ground	11/2		9/2		60 245.	
O ¹⁶ O ¹⁷	1-	7, 7← 8, 7	Ground	11/2		13/2		60 245.	
O ₂ ¹⁶	1-	5, 5← 4, 5	Ground					60 306.044	.010
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	3, 1, ← 2, 1	Excited					60 308.0	.4
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, 2← 2, 2	Ground					60 311.40	.2
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, 1← 2, 1	Ground					60 315.48	.2
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, 0← 2, 0	Ground					60 316.86	.2
H ₂ N ¹⁴ C ¹² N ¹⁴	4- 361	3, 1, ← 2, 1	Ground					60 379.2	.4
O ₂ ¹⁶	1-	7, 7← 8, 7	Ground					60 434.776	.010
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, ← 2,	Excited					60 470.04	.2
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, ← 2,	Excited					60 538.71	.2
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, ← 2,	Excited					60 545.19	.2
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, ← 2,	Excited					60 547.38	.2
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, ← 2,	Excited					60 556.62	.2
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	3, 2, 2← 2, 2, 1	Ground					60 615.88	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	3, 2, 1← 2, 2, 0	Ground					60 617.30	
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	3, 0, 3← 2, 0, 2	Ground					60 625.68	
C ¹² H ₃ N ¹⁴ C ¹²	4- 831	3, ← 2,	Excited					60 636.63	.2
O ¹⁶ C ¹² S ³²	4- 521	5← 4	Ground					60 814.08	.05
O ₂ ¹⁶	1-	9, 9←10, 9	Ground					61 150.570	.010
H ₂ C ¹² :C ¹² O ¹⁶	4- 711	3, 1, 2← 2, 1, 1	Ground					61 190.24	
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 6← 7, 1, 7	Ground					61 526.00	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 6← 7, 1, 7	Ground					61 527.05	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 2, 6← 7, 1, 7	Ground					61 528.10	.05
(C ¹² H ₃) ₂ S ³²	3- 601	8, 1, 7← 8, 0, 8	Ground					61 594.68	.05
(C ¹² H ₃) ₂ S ³²	3- 601	8, 1, 7← 8, 0, 8	Ground					61 595.62	.05
(C ¹² H ₃) ₂ S ³²	3- 601	8, 1, 7← 8, 0, 8	Ground					61 596.57	.05
O ₂ ¹⁶	1-	11,11←12,11	Ground					61 800.155	.010
O ₂ ¹⁶	1-	13,13←14,13	Ground					62 411.223	.010

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₁	F' ₁	F		
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 5← 7, 2, 6	Ground					62 433.00	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 5← 7, 2, 6	Ground					62 434.12	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 5← 7, 2, 6	Ground					62 435.22	.05
O ₂ ¹⁶	1-	3, 3← 2, 3	Ground					62 486.255	.010
O ₂ ¹⁶	1-	15,15←16,15	Ground					62 996.6	.2
(C ¹² H ₃) ₂ S ³²	3- 601	10, 4, 6←10, 3, 7	Ground					63 236.56	.05
(C ¹² H ₃) ₂ S ³²	3- 601	10, 4, 6←10, 3, 7	Ground					63 237.73	.05
(C ¹² H ₃) ₂ S ³²	3- 601	10, 4, 6←10, 3, 7	Ground					63 238.90	.05
O ₂ ¹⁶	1-	11,17←18,17	Ground					63 568.520	.010
O ₂ ¹⁶	1-	19,19←20,19	Ground					64 128.0	.8
O ₂ ¹⁶	1-	21,21←22,21	Ground					64 678.2	.2
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	3, 1, 3← 2, 1, 2						64 936.26	.40
O ₂ ¹⁶	1-	23,23←24,23	Ground					65 224.120	.2
D ₂ Se ⁸²	4-1751	1, 1, 0← 1, 0, 1	Ground					65 971.71	
D ₂ Se ⁸⁰	4-1749	1, 1, 0← 1, 0, 1	Ground					66 085.41	
D ₂ Se ⁷⁸	4-1748	1, 1, 0← 1, 0, 1	Ground					66 204.87	
D ₂ Se ⁷⁷	4-1747	1, 1, 0← 1, 0, 1	Ground					66 266.82	
D ₂ Se ⁷⁶	4-1746	1, 1, 0← 1, 0, 1	Ground					66 330.78	
HN ₃ ¹⁴	4-1701	3, 1, 3← 2, 1, 2	Ground					66 366.68	.25
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	9, 1← 8, 2	Ground					66 902.0	.05
HN ₃ ¹⁴	4-1701	3, 2, 2← 2, 2, 1	Ground	4			3	66 935.94	.25
HN ₃ ¹⁴	4-1701	3, 2, 1← 2, 2, 0	Ground	2			1	66 935.94	.25
HN ₃ ¹⁴	4-1701	3, 2, 2← 2, 2, 1	Ground	3			2	66 937.27	.25
HN ₃ ¹⁴	4-1701	3, 2, 1← 2, 2, 0	Ground	4			3	66 937.27	.25
HN ₃ ¹⁴	4-1701	3, 2, 1← 2, 2, 0	Ground	3			2	66 938.71	.25
HN ₃ ¹⁴	4-1701	3, 0, 3← 2, 0, 2	Ground					66 945.50	.25
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	3, 0, 3← 2, 0, 2						67 291.05	.41
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	3, 2, 2← 2, 2, 1						67 414.80	.41
HN ₃ ¹⁴	4-1701	3, 1, 2← 2, 1, 1	Ground					67 520.75	.25
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	3, 2, 1← 2, 2, 0						67 536.09	.41
H ₂ N ¹⁴ N ¹⁴ H ₂	3- 51	9, 1← 8, 2	Ground					67 540.1	.05
N ¹⁴ D ₂ H	4-1774	1, 1, 1← 1, 0, 1	Ground					67 841.52	.15
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	8, 2, 7← 7, 2, 6	Ground					68 433.00	.05
S ³² O ₂ ¹⁶	4-1831	6, 1, 5← 6, 0, 6	Ground					68 972.10	
S ³² O ₂ ¹⁶	4-1831	1, 1, 1← 0, 0, 0	Ground					69 576.06	.18
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	3, 1, 2← 2, 1, 1						69 852.03	.42
C ¹² H ₃ Hg ²⁰² Cl ³⁵	4- 447	17, 4←16, 4	Ground					70 575.74	
C ¹² H ₃ Hg ²⁰² Cl ³⁵	4- 447	17, 3←16, 3	Ground					70 580.86	
C ¹² H ₃ Hg ²⁰² Cl ³⁵	4- 447	17, 2←16, 2	Ground					70 584.44	
C ¹² H ₃ Hg ²⁰² Cl ³⁵	4- 447	17, 1←16, 1	Ground					70 586.55	
C ¹² H ₃ Hg ²⁰² Cl ³⁵	4- 447	17, 0←16, 0	Ground					70 587.33	
C ¹² H ₃ Hg ²⁰⁰ Cl ³⁵	4- 445	17, 5←16, 5	Ground					70 590.40	
C ¹² H ₃ Hg ²⁰⁰ Cl ³⁵	4- 445	17, 4←16, 4	Ground					70 596.92	
C ¹² H ₃ Hg ²⁰⁰ Cl ³⁵	4- 445	17, 3←16, 3	Ground					70 601.86	
C ¹² H ₃ Hg ²⁰⁰ Cl ³⁵	4- 445	17, 2←16, 2	Ground					70 605.45	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F' ₂	F' ₁	F		
C ¹² H ₃ Hg ¹⁹⁹ Cl ³⁵	4- 443	17, 4←16, 4	Ground					70 607.56	
C ¹² H ₃ Hg ²⁰⁰ Cl ³⁵	4- 445	17, 1←16, 1	Ground					70 607.58	
C ¹² H ₃ Hg ²⁰⁰ Cl ³⁵	4- 445	17, 0←16, 0	Ground					70 608.29	
C ¹² H ₃ Hg ¹⁹⁹ Cl ³⁵	4- 443	17, 3←16, 3	Ground					70 612.46	
C ¹² H ₃ Hg ¹⁹⁹ Cl ³⁵	4- 443	17, 2←16, 2	Ground					70 616.02	
C ¹² H ₃ Hg ¹⁹⁸ Cl ³⁵	4- 441	17, 4←16, 4	Ground					70 618.31	
C ¹² H ₃ Hg ¹⁹⁹ Cl ³⁵	4- 443	17, 1←16, 1	Ground					70 618.32	
C ¹² H ₃ Hg ¹⁹⁹ Cl ³⁵	4- 443	17, 0←16, 0	Ground					70 618.92	
C ¹² H ₃ Hg ¹⁹⁸ Cl ³⁵	4- 441	17, 3←16, 3	Ground					70 623.21	
C ¹² H ₃ Hg ¹⁹⁸ Cl ³⁵	4- 441	17, 2←16, 2	Ground					70 626.86	
C ¹² H ₃ Hg ¹⁹⁸ Cl ³⁵	4- 441	17, 1←16, 1	Ground					70 629.03	
C ¹² H ₃ Hg ¹⁹⁸ Cl ³⁵	4- 441	17, 0←16, 0	Ground					70 629.71	
I ¹²⁷ C ¹² N ¹⁴	4- 511	11←10	Ground	19/2		17/2		70 949.66	.18
I ¹²⁷ C ¹² N ¹⁴	4- 511	11←10	Ground	23/2		21/2		70 959.14	.18
I ¹²⁷ C ¹² N ¹⁴	4- 511	11←10	Ground	27/2		25/2		70 961.30	.18
I ¹²⁷ C ¹² N ¹⁴	4- 511	11←10	Ground	25/2		23/2		70 963.90	.18
DC ¹⁵ N ¹⁴	4- 294	1← 0	Ground	1		1		71 173.58	.20
DC ¹³ N ¹⁴	4- 294	1← 0	Ground	2		1		71 174.96	.20
DC ¹³ N ¹⁴	4- 294	1← 0	Ground	0		1		71 177.02	.20
Si ²⁸ F ₃ ¹⁹ H	4-1641	5, ← 4,	Ground					72 076.8	1.
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	8, 3, 6← 7, 3, 5	Ground					72 250.03	.05
HC ¹² HO ¹⁶	4- 381	5, 1, 4← 5, 1, 5	Ground					72 409.35	
DC ¹² N ¹⁴	4- 292	1← 0	Ground	1		1		72 413.25	.20
DC ¹² N ¹⁴	4- 292	1← 0	Ground	2		1		72 414.62	.20
DC ¹² N ¹⁴	4- 292	1← 0	Ground	0		1		72 416.68	.20
S ³² O ₂ ¹⁶	4-1831	6, 0, 6← 5, 1, 5	Ground					72 758.28	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	8, 5, 4← 7, 5, 3	Ground					72 805.86	.05
HC ¹² HO ¹⁶	4-381	1, 0, 1← 0, 0, 0	Ground					72 838.14	
O ¹⁶ C ¹² S ³²	4- 521	6← 5	Ground					72 976.80	
Br ⁸¹ C ¹² N ¹⁴	4- 142	9← 8	Ground	15/2		13/2		73 738.42	.18
Br ⁸¹ C ¹² N ¹⁴	4- 142	9← 8	Ground	17/2		15/2		73 738.42	.18
Br ⁸¹ C ¹² N ¹⁴	4- 142	9← 8	Ground	19/2		17/2		73 741.20	.18
Br ⁸¹ C ¹² N ¹⁴	4- 142	9← 8	Ground	21/2		19/2		73 741.20	.18
Br ⁸¹ C ¹² N ¹⁴	4- 142	9← 8	Ground					73 742.	
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	8, 4, 4← 7, 4, 3	Ground					73 816.70	.05
N ¹⁴ H ₂ D	4-1773	2, 1, 2← 2, 0, 2	Ground					74 155.73	.15
Br ⁷⁹ C ¹² N ¹⁴	4- 141	9← 8	Ground	15/2		13/2		74 159.48	.18
Br ⁷⁹ C ¹² N ¹⁴	4- 141	9← 8	Ground	17/2		15/2		74 159.48	.18
Br ⁷⁹ C ¹² N ¹⁴	4- 141	9← 8	Ground	19/2		17/2		74 162.76	.18
Br ⁷⁹ C ¹² N ¹⁴	4- 141	9← 8	Ground	21/2		19/2		74 162.76	.18
Br ⁷⁹ C ¹² N ¹⁴	4- 141	9← 8	Ground					74 165.	
C ¹² H ₃ I ¹²⁷	4- 481	5, 4← 4, 4	Ground	11/2		9/2		74 829.54	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 4← 4, 4	Ground	13/2		11/2		74 849.92	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 3← 4, 3	Ground	13/2		11/2		74 926.04	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 2← 4, 2	Ground	11/2		9/2		74 960.76	.16

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
C ¹² H ₃ I ¹²⁷	4- 481	5, 3← 4, 3	Ground	9/2 7/2	74 964.36	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 0← 4, 0	Ground	7/2 5/2	74 967.66	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 2← 4, 2	Ground	9/2 7/2	74 971.76	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 1← 4, 1	Ground	9/2 7/2	74 976.22	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 1← 4, 1	Ground	7/2 5/2	74 977.62	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 0← 4, 0	Ground	9/2 7/2	74 977.62	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 2← 4, 2	Ground	13/2 11/2	74 982.18	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 0← 4, 0	Ground	5/2 3/2	74 986.14	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 1← 4, 1	Ground	11/2 9/2	74 993.28	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 0← 4, 0	Ground	11/2 9/2	75 004.28	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 2← 4, 2	Ground	7/2 5/2	75 007.62	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 1← 4, 1	Ground	13/2 11/2	75 016.20	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 0← 4, 0	Ground	15/2 13/2	75 019.28	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 1← 4, 1	Ground	15/2 13/2	75 026.20	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 0← 4, 0	Ground	13/2 11/2	75 027.58	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 2← 4, 2	Ground	15/2 13/2	75 046.48	.16
C ¹² H ₃ I ¹²⁷	4- 481	5, 3← 4, 3	Ground	15/2 13/2	75 081.02	.16
HDS ³²	4-1727	8, 4, 4← 8, 4, 5	Ground		75 551.73	.05
C ¹² H ₃ Br ⁶¹	4- 402	4, 3← 3, 3	Ground	5/2 3/2	76 152.28	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 3← 3, 3	Ground	11/2 9/2	76 207.66	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 2← 3, 2	Ground	5/2 3/2	76 213.16	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 2← 3, 2	Ground	11/2 9/2	76 230.18	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 1← 3, 1	Ground	11/2 9/2	76 243.66	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 0← 3, 0	Ground	11/2 9/2	76 248.32	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 0← 3, 0	Ground	9/2 7/2	76 248.32	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 1← 3, 1	Ground	5/2 3/2	76 249.94	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 1← 3, 1	Ground	9/2 7/2	76 255.68	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 2← 3, 2	Ground	7/2 5/2	76 261.96	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 1← 3, 1	Ground	7/2 5/2	76 261.96	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 0← 3, 0	Ground	5/2 3/2	76 261.96	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 0← 3, 0	Ground	7/2 5/2	76 261.96	.18
C ¹² H ₃ Br ⁸¹	4- 402	4, 2← 3, 2	Excited	9/2 7/2	76 278.16	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 3← 3, 3	Ground	5/2 3/2	76 425.18	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 3← 3, 3	Ground	11/2 9/2	76 491.36	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 2← 3, 2	Ground	5/2 3/2	76 496.60	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 2← 3, 2	Ground	11/2 9/2	76 517.36	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 1← 3, 1	Ground	11/2 9/2	76 532.88	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 0← 3, 0	Ground	9/2 7/2	76 538.02	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 0← 3, 0	Ground	11/2 9/2	76 538.02	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 1← 3, 1	Ground	5/2 3/2	76 540.20	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 1← 3, 1	Ground	9/2 7/2	76 547.24	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 2← 3, 2	Ground	7/2 5/2	76 554.82	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 1← 3, 1	Ground	7/2 5/2	76 554.82	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 0← 3, 0	Ground	7/2 5/2	76 554.82	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 3← 3, 3	Ground	7/2 5/2	76 554.82	.18

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ Br ⁷⁹	4- 401	4, 0 $\leftarrow$ 3, 0	Ground	5/2		3/2		76 554.82	.18
C ¹² H ₃ Br ⁷⁹	4- 401	4, 2 $\leftarrow$ 3, 2	Ground	9/2		7/2		76 575.22	.18
D ₂ Se ⁸²	4-1751	2, 2, 0 $\leftarrow$ 2, 1, 1	Ground					76 612.14	
C ¹² H ₃ Br ⁷⁹	4- 401	4, 3 $\leftarrow$ 3, 3	Ground	9/2		7/2		76 621.78	.18
Cl ³⁵ F ¹⁹ C ¹² O ¹⁶	4- 151	8, 3, 5 $\leftarrow$ 7, 3, 4	Ground					76 741.27	.05
(C ¹² H ₃) ₂ S ³²	3- 601	7, 3, 5 $\leftarrow$ 6, 4, 2	Ground					76 891.91	.05
D ₂ Se ⁸⁰	4-1749	2, 2, 0 $\leftarrow$ 2, 1, 1	Ground					76 907.04	
D ₂ Se ⁷⁸	4-1748	2, 2, 0 $\leftarrow$ 2, 1, 1	Ground					77 216.40	
D ₂ Se ⁷⁷	4-1747	2, 2, 0 $\leftarrow$ 2, 1, 1	Ground					77 377.10	
I ¹²⁷ C ¹² N ¹⁴	4- 511	12 $\leftarrow$ 11	Ground					77 413.	
D ₂ Se ⁷⁶	4-1746	2, 2, 0 $\leftarrow$ 2, 1, 1	Ground					77 542.71	
C ¹² H ₃ Cl ³⁷	4- 423	3, 2 $\leftarrow$ 2, 2	Ground	7/2		5/2		78 511.68	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 2 $\leftarrow$ 2, 2	Ground	5/2		5/2		78 511.68	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 0 $\leftarrow$ 2, 0	Ground	7/2		7/2		78 512.80	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 2 $\leftarrow$ 2, 2	Ground	5/2		3/2		78 522.00	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 2 $\leftarrow$ 2, 2	Ground	3/2		3/2		78 522.00	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 1 $\leftarrow$ 2, 1	Ground	7/2		5/2		78 523.32	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 1 $\leftarrow$ 2, 1	Ground	5/2		3/2		78 523.32	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 0 $\leftarrow$ 2, 0	Ground	3/2		1/2		78 523.32	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 0 $\leftarrow$ 2, 0	Ground	5/2		3/2		78 523.32	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 2 $\leftarrow$ 2, 2	Ground	7/2		7/2		78 526.14	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 2 $\leftarrow$ 2, 2	Ground	9/2		7/2		78 526.14	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 0 $\leftarrow$ 2, 0	Ground	9/2		7/2		78 527.10	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 1 $\leftarrow$ 2, 1	Ground	3/2		1/2		78 527.10	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 0 $\leftarrow$ 2, 0	Ground	7/2		5/2		78 527.10	.16
C ¹² H ₃ Cl ³⁷	4- 423	3, 1 $\leftarrow$ 2, 1	Ground	9/2		7/2		78 527.10	.16
C ¹² H ₃ Cl ³⁵	4- 421	3, 2 $\leftarrow$ 2, 2	Ground	5/2		5/2		79 736.96	.16
C ¹² H ₃ Cl ³⁵	4- 421	3, 0 $\leftarrow$ 2, 0	Ground	7/2		7/2		79 736.96	.16
C ¹² H ₃ Cl ³⁵	4- 421	3, 2 $\leftarrow$ 2, 2	Ground	7/2		5/2		79 736.96	.16
C ¹² H ₃ Cl ³⁵	4- 421	3, 0 $\leftarrow$ 2, 0	Ground	3/2		1/2		79 751.44	
C ¹² H ₃ Cl ³⁵	4- 421	3, 1 $\leftarrow$ 2, 1	Ground	7/2		5/2		79 751.44	
C ¹² H ₃ Cl ³⁵	4- 421	3, 0 $\leftarrow$ 2, 0	Ground	5/2		3/2		79 751.44	
C ¹² H ₃ Cl ³⁵	4- 421	3, 0 $\leftarrow$ 2, 0	Ground	9/2		7/2		79 756.00	
C ¹² H ₃ Cl ³⁵	4- 421	3, 2 $\leftarrow$ 2, 2	Ground	5/2		7/2		79 756.00	
C ¹² H ₃ Cl ³⁵	4- 421	3, 2 $\leftarrow$ 2, 2	Ground	9/2		7/2		79 756.00	
C ¹² H ₃ Cl ³⁵	4- 421	3, 1 $\leftarrow$ 2, 1	Ground	3/2		1/2		79 756.00	
C ¹² H ₃ Cl ³⁵	4- 421	3, 1 $\leftarrow$ 2, 1	Ground	9/2		7/2		79 756.00	
C ¹² H ₃ Cl ³⁵	4- 421	3, 0 $\leftarrow$ 2, 0	Ground	7/2		5/2		79 756.00	
C ¹² H ₃ Cl ³⁵	4- 421	3, 2 $\leftarrow$ 2, 2	Ground	7/2		7/2		79 756.00	
C ¹² H ₃ Cl ³⁵	4- 421	3, 0 $\leftarrow$ 2, 0	Ground	5/2		5/2		79 764.56	.16
C ¹² H ₃ Cl ³⁵	4- 421	3, 2 $\leftarrow$ 2, 2	Ground	3/2		1/2		79 768.98	.16
C ¹² H ₃ Cl ³⁵	4- 421	3, 0 $\leftarrow$ 2, 0	Ground	3/2		3/2		79 769.94	.16
HDO ¹⁶	4-1712	1, 1, 0 $\leftarrow$ 1, 1, 1	Ground					80 578.15	
DN ¹⁴ C ¹² O ¹⁶	4- 303	4, 1, 4 $\leftarrow$ 3, 1, 3	Ground					81 106.32	.5
DN ¹⁴ C ¹² O ¹⁶	4- 303	4, 0, 4 $\leftarrow$ 3, 0, 3	Ground					81 571.53	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
DN ¹⁴ C ¹² O ¹⁶	4- 303	4, 2, 3← 3, 2, 2	Ground					81 578.97	.5
DN ¹⁴ C ¹² O ¹⁶	4- 303	4, 2, 2← 3, 2, 1	Ground					81 579.61	.5
DN ¹⁴ C ¹² O ¹⁶	4- 303	4, 3, 2← 3, 3, 1	Ground					81 586.95	1.0
DN ¹⁴ C ¹² O ¹⁶	4- 303	4, 3, 1← 3, 3, 0	Ground					81 586.95	1.0
Br ⁸¹ C ¹² N ¹⁴	4- 142	10← 9	Ground					81 936.	
DN ¹⁴ C ¹² O ¹⁶	4- 303	4, 1, 3← 3, 1, 2	Ground					82 042.23	.5
Br ⁷⁹ C ¹² N ¹⁴	4- 141	10← 9	Ground					82 405.	
C ¹² HF ₃ ¹⁹	4- 281	4, 1← 3, 1	Ground					82 788.00	.20
C ¹² HF ₃ ¹⁹	4- 281	4, 0← 3, 0	Ground					82 788.00	.20
C ¹² HF ₃ ¹⁹	4- 281	4, 2← 3, 2	Ground					82 788.59	.20
C ¹² HF ₃ ¹⁹	4- 281	4, 3← 3, 3	Ground					82 789.28	.20
S ³² O ₂ ¹⁶	4-1831	8, 1, 7← 8, 0, 8	Ground					83 687.88	
I ¹²⁷ C ¹² N ¹⁴	4- 511	13←12	Ground					83 864.	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	5, 4← 4, 4						85 431.34	.20
C ¹² H ₃ C ¹² :C ¹² H	4-1041	5, 3← 4, 3						85 442.61	.20
C ¹² H ₃ C ¹² :C ¹² H	4-1041	5, 2← 4, 2						85 450.78	.20
C ¹² H ₃ C ¹² :C ¹² H	4-1041	5, 1← 4, 1						85 455.67	.20
C ¹² H ₃ C ¹² :C ¹² H	4-1041	5, 0← 4, 0						85 457.29	.20
HC ¹³ N ¹⁴	4- 293	1← 0	Ground	1		1		86 338.12	.30
HC ¹³ N ¹⁴	4- 293	1← 0	Ground	2		1		86 339.49	.30
HC ¹³ N ¹⁴	4- 293	1← 0	Ground	0		1		86 341.54	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	6, 0← 5, 0	Ground					86 490.06	.20
Si ²⁸ F ₃ ¹⁹ H	4-1641	6, 1← 5, 1	Ground					86 490.06	.20
Si ²⁸ F ₃ ¹⁹ H	4-1641	6, 2← 5, 2	Ground					86 490.67	.20
Si ²⁸ F ₃ ¹⁹ H	4-1641	6, 3← 5, 3	Ground					86 491.38	.20
Si ²⁸ F ₃ ¹⁹ H	4-1641	6, 4← 5, 4	Ground					86 492.42	.20
Si ²⁸ F ₃ ¹⁹ H	4-1641	6, 5← 5, 5	Ground					86 493.80	.20
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 1, 4← 3, 1, 3						86 545.92	.52
DN ¹⁴ C ¹² S ³²	4- 312	8, 1, 8← 7, 1, 7	Ground					87 361.71	.5
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 531.0	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 555.0	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, 0, 8← 7, 0, 7	Ground					87 563.05	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 1, 4← 3, 1, 3	Ground					87 597.03	.5
DN ¹⁴ C ¹² S ³²	4- 312	8, 2, 6← 7, 2, 5	Ground					87 626.37	.5
DN ¹⁴ C ¹² S ³²	4- 312	8, 2, 7← 7, 2, 6	Ground					87 626.37	.5
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 631.1	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 671.8	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, 3, 5← 7, 3, 4	Ground					87 679.66	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, 3, 6← 7, 3, 5	Ground					87 679.66	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 730.7	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 734.2	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 742.8	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 777.1	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, , ← 7, ,	Excited					87 799.3	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, 1, 7← 7, 1, 6	Ground					87 803.28	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F'_1	F'	F_1	F		
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 3, 2 $\leftarrow$ 3, 3, 1	Ground	5		4		87 866.82	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 3, 2 $\leftarrow$ 3, 3, 1	Ground	3		2		87 866.82	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 3, 1 $\leftarrow$ 3, 3, 0	Ground	5		4		87 866.82	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 3, 1 $\leftarrow$ 3, 3, 0	Ground	3		2		87 866.82	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 3, 1 $\leftarrow$ 3, 3, 0	Ground	4		3		87 867.60	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 3, 2 $\leftarrow$ 3, 3, 1	Ground	4		3		87 867.60	1.0
DN ¹⁴ C ¹² S ³²	4- 312	8, , $\leftarrow$ 7, ,	Excited					87 870.4	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 2, 3 $\leftarrow$ 3, 2, 2	Ground					87 898.53	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 2, 2 $\leftarrow$ 3, 2, 1	Ground					87 898.53	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, , $\leftarrow$ 3, ,	Excited					87 913.08	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 0, 4 $\leftarrow$ 3, 0, 3	Ground					87 925.45	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, , $\leftarrow$ 3, ,	Excited					87 969.72	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 0, $\leftarrow$ 3, 0,	Excited					88 067.49	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 2, $\leftarrow$ 3, 2,	Excited					88 069.80	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 0, $\leftarrow$ 3, 0,	Excited					88 083.84	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 1, $\leftarrow$ 3, 1,	Excited					88 131.78	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 1, 3 $\leftarrow$ 3, 1, 2	Ground					88 239.03	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, 1, $\leftarrow$ 3, 1,	Excited					88 334.64	1.0
HN ₃ ¹⁴	4-1701	4, 1, 4 $\leftarrow$ 3, 1, 3	Ground					88 488.03	.25
HN ¹⁴ C ¹² O ¹⁶	4- 301	4, , $\leftarrow$ 3, ,	Excited					88 623.90	1.0
HC ¹² N ¹⁴	4- 291	1 $\leftarrow$ 0	Ground	1		1		88 630.431	.005
HC ¹² N ¹⁴	4- 291	1 $\leftarrow$ 0	Ground	2		1		88 631.871	.005
HC ¹² N ¹⁴	4- 291	1 $\leftarrow$ 0	Ground	0		1		88 633.954	.005
HC ¹² N ¹⁴	4- 291	1 $\leftarrow$ 0	Ground					88 671.	
HN ₃ ¹⁴	4-1701	4, 3, 1 $\leftarrow$ 3, 3, 0	Ground	5		4		89 229.74	.25
HN ₃ ¹⁴	4-1701	4, 3, 2 $\leftarrow$ 3, 3, 1	Ground	3		2		89 229.74	.25
HN ₃ ¹⁴	4-1701	4, 3, 1 $\leftarrow$ 3, 3, 0	Ground	4		3		89 231.45	.25
HN ₃ ¹⁴	4-1701	4, 2, 3 $\leftarrow$ 3, 2, 2	Ground	5		4		89 247.11	.25
HN ₃ ¹⁴	4-1701	4, 2, 3 $\leftarrow$ 3, 2, 2	Ground	3		2		89 247.11	.25
HN ₃ ¹⁴	4-1701	4, 2, 3 $\leftarrow$ 3, 2, 2	Ground	4		3		89 247.84	.25
HN ₃ ¹⁴	4-1701	4, 2, 2 $\leftarrow$ 3, 2, 1	Ground	3		2		89 250.42	.25
HN ₃ ¹⁴	4-1701	4, 2, 2 $\leftarrow$ 3, 2, 1	Ground	5		4		89 250.42	.25
HN ₃ ¹⁴	4-1701	4, 2, 2 $\leftarrow$ 3, 2, 1	Ground	4		3		89 251.21	.25
HN ₃ ¹⁴	4-1701	4, 0, 4 $\leftarrow$ 3, 0, 3	Ground					89 258.55	.25
Sb ¹²³ D ₃	4-1794	1, $\leftarrow$ 0,	Ground	5/2		7/2		89 291.93	.3
Sb ¹²¹ D ₃	4-1793	1, $\leftarrow$ 0,	Ground	3/2		5/2		89 322.65	.3
Sb ¹²³ D ₃	4-1794	1, $\leftarrow$ 0,	Ground	9/2		7/2		89 326.39	.3
Sb ¹²¹ D ₃	4-1793	1, $\leftarrow$ 0,	Ground	7/2		5/2		89 365.05	.3
Sb ¹²³ D ₃	4-1794	1, $\leftarrow$ 0,	Ground	7/2		7/2		89 440.38	.3
Sb ¹²¹ D ₃	4-1793	1, $\leftarrow$ 0,	Ground	5/2		5/2		89 462.46	.3
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 0, 4 $\leftarrow$ 3, 0, 3						89 579.18	.53
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 2, 3 $\leftarrow$ 3, 2, 2						89 861.52	.54
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 3, 2 $\leftarrow$ 3, 3, 1						89 948.32	.54
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 3, 1 $\leftarrow$ 3, 3, 0						89 950.34	.54
HN ₃ ¹⁴	4-1701	4, 1, 3 $\leftarrow$ 3, 1, 2	Ground					90 026.99	.25

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 2, 2← 3, 2, 1						90 164.52	.54
F ¹⁹ HC ¹² O ¹⁶	4- 271	5, 1, 4← 5, 0, 5						90 786.64	.05
D ₂ O ¹⁶	4-1713	6, 1, 6← 5, 2, 3	Ground					90 916.8	
Na ²³ Cl ³⁵	1-	7← 6	Ground					91 170.45	0.04
HN ¹⁴ C ¹² S ³⁴	4- 316	8, 1, 8← 7, 1, 7	Ground					91 495.6	.5
HN ¹⁴ C ¹² S ³⁴	4- 316	8, 0, 8← 7, 0, 7	Ground					91 635.9	.5
HN ¹⁴ C ¹² S ³⁴	4- 316	8, 2, 6← 7, 2, 5	Ground					91 658.7	.5
HN ¹⁴ C ¹² S ³⁴	4- 316	8, 2, 7← 7, 2, 6	Ground					91 658.7	.5
HN ¹⁴ C ¹² S ³⁴	4- 316	8, 3, 6← 7, 3, 5	Ground					91 671.7	1.0
HN ¹⁴ C ¹² S ³⁴	4- 316	8, 3, 5← 7, 3, 4	Ground					91 671.7	1.0
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 1, 4← 3, 1, 3	Ground					91 706.67	.15
HN ¹⁴ C ¹² S ³⁴	4- 316	8, 1, 7← 7, 1, 6	Ground					91 784.3	.5
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 9← 9, 9	Ground					91 879.08	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 8← 9, 8	Ground					91 879.53	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 7← 9, 7	Ground					91 879.92	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 6← 9, 6	Ground					91 880.27	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 5← 9, 5	Ground					91 880.56	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 4← 9, 4	Ground					91 880.83	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 3← 9, 3	Ground					91 881.00	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 2← 9, 2	Ground					91 881.16	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 0← 9, 0	Ground					91 881.16	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	10, 1← 9, 1	Ground					91 881.16	.20
HN ¹⁵ N ₂ ¹⁴	4-1704	4, 1, 4← 3, 1, 3	Ground					91 894.81	.15
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 4← 4, 4	Ground					91 957.94	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 4← 4, 4	Ground					91 959.20	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 3← 4, 3	Ground					91 970.62	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 3← 4, 3	Ground					91 971.35	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 2← 4, 2	Ground					91 980.00	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 1← 4, 1	Ground					91 985.35	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 0← 4, 0	Ground					91 987.07	.25
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 3, 2← 3, 3, 1	Ground	3			2	92 131.38	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 3, 1← 3, 3, 0	Ground	5			4	92 131.38	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 3, 1← 3, 3, 0	Ground	4			3	92 133.13	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 3, 1← 3, 3, 0	Ground	4			5	92 133.13	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 2, 3← 3, 2, 2	Ground	3			2	92 161.78	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 2, 3← 3, 2, 2	Ground	5			4	92 161.78	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 2, 2← 3, 2, 1	Ground	3			2	92 162.50	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 2, 2← 3, 2, 1	Ground	5			4	92 162.50	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 2, 3← 3, 2, 2	Ground	3			4	92 162.50	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 2, 2← 3, 2, 1	Ground	2			3	92 162.50	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 2, 2← 3, 2, 1	Ground	4			3	92 162.50	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 2, 2← 3, 2, 1	Ground	4			3	92 163.45	.15
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 1← 4, 1	Excited					92 175.46	.25
F ¹⁹ DC ¹² O ¹⁶	4- 272	2, 2, 1← 3, 1, 2						92 176.92	.04
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 0, 4← 3, 0, 3	Ground					92 185.47	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 4← 4, 4	Excited					92 218.88	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 3← 4, 3	Excited					92 234.88	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 2← 4, 2	Excited					92 247.42	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 4← 4, 4	Excited					92 250.14	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 1← 4, 1	Excited					92 256.53	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 3← 4, 3	Excited					92 258.59	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 0← 4, 0	Excited					92 261.53	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 2← 4, 2	Excited					92 264.23	.25
HN ¹⁵ N ₂ ¹⁴	4-1704	4, 3, 2← 3, 3, 1	Ground					92 325.35	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	4, 3, 1← 3, 3, 0	Ground					92 325.35	.15
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 1← 4, 1	Excited					92 353.67	.25
HN ¹⁵ N ₂ ¹⁴	4-1704	4, 2, 3← 3, 2, 2	Ground					92 355.67	.15
HN ¹⁵ N ₃ ¹⁴	4-1704	4, 2, 2← 3, 2, 1	Ground					92 356.46	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	4, 0, 4← 3, 0, 3	Ground					92 379.68	.15
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, ← 4,	Excited					92 510.7	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, ← 4,	Excited					92 519.6	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, ← 4,	Excited					92 524.2	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, ← 4,	Excited					92 525.1	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 3← 4, 3	Excited					92 526.9	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 2← 4, 2	Excited					92 533.0	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	5, 1← 4, 1	Excited					92 538.7	.25
HN ₂ ¹⁴ N ¹⁵	4-1703	4, 1, 3← 3, 1, 2	Ground					92 653.45	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	4, 1, 3← 3, 1, 2	Ground					92 853.53	.15
C ¹² H ₂ DF ¹⁹	4- 465	2, 1, 2← 1, 1, 1	Ground					92 918.7	1.
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	4, 1, 3← 3, 1, 2						93 098.46	.56
F ¹⁹ HC ¹² O ¹⁶	4- 271	5, 2, 4← 6, 1, 5						93 164.04	.05
Cl ³⁷ C ¹² N ¹⁴	4- 173	8← 7	Ground					93 552.59	.20
HN ¹⁴ C ¹² S ³²	4- 311	8, 1, 8← 7, 1, 7	Ground					93 692.76	.5
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					93 695.0	1.0
Cl ³⁷ C ¹² N ¹⁴	4- 173	8← 7	Excited					93 751.28	
HN ¹⁴ C ¹² S ³²	4- 311	8, 0, 8← 7, 0, 7	Ground					93 829.91	.5
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					93 851.2	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, 2, 7← 7, 2, 6	Ground					93 863.28	.5
HN ¹⁴ C ¹² S ³²	4- 311	8, 2, 6← 7, 2, 5	Ground					93 863.28	.5
Cl ³⁷ C ¹² N ¹⁴	4- 173	8← 7	Excited					93 865.98	
HN ¹⁴ C ¹² S ³²	4- 311	8, 3, 6← 7, 3, 5	Ground					93 875.28	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, 3, 5← 7, 3, 4	Ground					93 875.28	1.0
F ¹⁹ DC ¹² O ¹⁶	4- 272	8, 1, 7← 8, 0, 8						93 881.72	.04
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					93 895.6	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					93 899.3	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					93 902.9	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					93 953.3	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					93 983.7	1.0
C ¹² H ₂ DF ¹⁹	4- 465	2, 0, 2← 1, 0, 1	Ground					93 994.7	1.
HN ¹⁴ C ¹² S ³²	4- 311	8, 1, 7← 7, 1, 6	Ground					93 994.96	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HN ¹⁴ C ¹² S ³²	4- 311	8, 0, ← 7, 0,	Excited					94 003.9	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, 0, ← 7, 0,	Excited					94 012.2	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					94 053.4	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					94 073.3	1.0
HN ¹⁴ C ¹² S ³²	4- 311	8, , ← 7, ,	Excited					94 086.9	1.0
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16,12←16,12	Ground					94 225.12	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16,11←16,11	Ground					94 229.43	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16,10←16,10	Ground					94 233.31	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 9←15, 9	Ground					94 236.82	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 8←15, 8	Ground					94 239.97	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 7←15, 7	Ground					94 242.76	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 6←15, 6	Ground					94 245.17	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 5←15, 5	Ground					94 247.19	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 4←15, 4	Ground					94 248.88	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 3←15, 3	Ground					94 250.24	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 2←15, 2	Ground					94 251.20	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 1←15, 1	Ground					94 251.78	.20
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	16, 0←15, 0	Ground					94 251.93	.20
D ₂ Se ⁸²	4-1751	3, 3, 0← 3, 2, 1	Ground					94 462.12	
HN ₃ ¹⁴	4-1701	4, 1, 4← 3, 1, 3	Ground					94 749.42	.25
F ¹⁹ DC ¹² O ¹⁶	4- 272	2, 1, 2← 1, 0, 1						94 920.60	.04
D ₂ Se ⁸⁰	4-1749	3, 3, 0← 3, 2, 1	Ground					95 082.56	
C ¹² H ₂ DF ¹⁹	4- 465	2, 1, 1← 1, 1, 0	Ground					95 086.0	1.
HN ₃ ¹⁴	4-1701	4, 3, 2← 3, 3, 1	Ground	5		4		95 203.10	.25
HN ₃ ¹⁴	4-1701	4, 3, 2← 3, 3, 1	Ground	3		2		95 203.10	.25
HN ₃ ¹⁴	4-1701	4, 4, 1← 3, 3, 0	Ground	4		3		95 205.12	.25
HN ₃ ¹⁴	4-1701	4, 2, 3← 3, 2, 2	Ground	5		4		95 235.45	.25
HN ₃ ¹⁴	4-1701	4, 2, 3← 3, 2, 2	Ground	3		2		95 235.45	.25
HN ₃ ¹⁴	4-1701	4, 2, 2← 3, 2, 1	Ground	5		4		95 236.17	.25
HN ₃ ¹⁴	4-1701	4, 2, 2← 3, 2, 1	Ground	3		2		95 236.17	.25
HN ₃ ¹⁴	4-1701	4, 2, 3← 3, 2, 2	Ground	4		3		95 236.17	.25
HN ₃ ¹⁴	4-1701	4, 2, 2← 3, 2, 1	Ground	4		3		95 237.03	.25
C ¹² H ₃ Br ⁸¹	4- 402	5, 2← 4, 2	Ground	7/2		5/2		95 253.89	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 4← 4, 4	Ground	13/2		11/2		95 259.24	.27
HN ₃ ¹⁴	4-1701	4, 0, 4← 3, 0, 3	Ground					95 260.50	.25
C ¹² H ₃ Br ⁸¹	4- 402	5, 3← 4, 3	Ground	7/2		5/2		95 263.47	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 3← 4, 3	Ground	13/2		11/2		95 281.53	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 2← 4, 2	Ground	13/2		11/2		95 297.55	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 1← 4, 1	Ground	13/2		11/2		95 307.48	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 0← 4, 0	Ground	11/2		9/2		95 310.78	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 0← 4, 0	Ground	13/2		11/2		95 310.78	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 0← 4, 0	Ground	9/2		7/2		95 319.12	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 1← 4, 1	Ground	9/2		7/2		95 319.12	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 0← 4, 0	Ground	7/2		5/2		95 319.12	.27
C ¹² H ₃ Br ⁸¹	4- 402	5, 2← 4, 2	Ground	11/2		9/2		95 322.15	.27

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ Br ⁸¹	4- 402	5, 3← 4, 3	Ground	11/2		9/2		95 336.01	.27
F ¹⁹ HC ¹² O ¹⁶	4- 271	6, 1, 5← 6, 0, 6						95 339.16	.05
Cl ³⁵ C ¹² N ¹⁴	4- 171	8← 7	Ground					95 529.86	.20
C ¹² H ₃ Br ⁷⁹	4- 401	5, 4← 4, 4	Ground	13/2		11/2		95 615.73	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 3← 4, 3	Ground	7/2		5/2		95 619.24	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 3← 4, 3	Ground	13/2		11/2		95 640.87	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 2← 4, 2	Ground	7/2		5/2		95 654.73	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 2← 4, 2	Ground	13/2		11/2		95 659.20	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 1← 4, 1	Ground	13/2		11/2		95 669.97	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 0← 4, 0	Ground	13/2		11/2		95 673.51	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 0← 4, 0	Ground	11/2		9/2		95 673.51	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 1← 4, 1	Ground	7/2		5/2		95 676.39	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 1← 4, 1	Ground	11/2		9/2		95 677.20	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 0← 4, 0	Ground	7/2		5/2		95 683.62	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 0← 4, 0	Ground	9/2		7/2		95 683.62	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 1← 4, 1	Ground	9/2		7/2		95 683.62	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 3← 4, 3	Ground	9/2		7/2		95 683.62	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 2← 4, 2	Ground	9/2		7/2		95 683.62	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 2← 4, 2	Ground	11/2		9/2		95 688.27	.27
C ¹² H ₃ Br ⁷⁹	4- 401	5, 3← 4, 3	Ground	11/2		9/2		95 706.12	.27
Cl ³⁵ C ¹² N ¹⁴	4- 171	8← 7	Excited					95 731.52	
D ₂ Se ⁷⁸	4-1748	3, 3, 0← 3, 2, 1	Ground					95 733.92	
HN ₃ ¹⁴	4-1701	4, 1, 3← 3, 1, 2	Ground					95 760.15	.25
Cl ³⁵ C ¹² N ¹⁴	4- 171	8← 7	Excited					95 850.88	
O ¹⁶ C ¹² Se ⁸²	4- 548	12←11	Ground					95 852.94	.20
D ₂ Se ⁷⁷	4-1747	3, 3, 0← 3, 2, 1	Ground					96 073.00	
O ₃ ¹⁶	4-1841	2, 1, 1← 2, 0, 2	Ground					96 228.84	.18
O ¹⁶ C ¹² Se ⁸⁰	4- 547	12←11	Ground					96 418.95	.20
D ₂ Se ⁷⁶	4-1746	3, 3, 0← 3, 2, 1	Ground					96 423.40	
O ¹⁶ C ¹² Se ⁸⁰	4- 547	12←11	Excited					96 546.60	
O ¹⁶ C ¹² Se ⁸⁰	4- 547	12←11	Excited					96 622.76	
O ¹⁶ C ¹² Se ⁷⁸	4- 545	12←11	Ground					97 013.24	.20
O ¹⁶ C ¹² S ³²	4- 521	8← 7	Ground					97 301.19	.20
O ¹⁶ C ¹² S ³⁴	4- 523	8← 7	Ground					97 301.31	.20
O ¹⁶ C ¹² Se ⁷⁷	4- 544	12←11	Ground					97 321.07	.20
O ¹⁶ C ¹² Se ⁷⁶	4- 543	12←11	Ground					97 637.78	.20
DN ¹⁴ C ¹² S ³²	4- 312	9, 1, 9← 8, 1, 8	Ground					98 281.15	.5
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Ground					98 317.37	.20
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 440.8	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 472.6	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 504.1	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, 0, 9← 8, 0, 8	Ground					98 507.94	.5
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Excited					98 545.65	
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Excited					98 546.18	
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Excited					98 547.08	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Excited					98 547.63	
DN ¹⁴ C ¹² S ³²	4- 312	9, 2, 8← 8, 2, 7	Ground					98 578.99	.5
DN ¹⁴ C ¹² S ³²	4- 312	9, 2, 7← 8, 2, 6	Ground					98 579.41	.5
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 584.5	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 628.9	1.0
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Excited					98 638.49	
DN ¹⁴ C ¹² S ³²	4- 312	9, 3, 7← 8, 3, 6	Ground					98 638.64	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, 3, 6← 8, 3, 5	Ground					98 638.64	1.0
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Excited					98 639.01	
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Excited					98 639.95	
Br ⁸¹ C ¹² N ¹⁴	4- 142	12←11	Excited					98 640.42	
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 691.0	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 697.6	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 701.6	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 710.2	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 773.9	1.0
DN ¹⁴ C ¹² S ³²	4- 312	9, 1, 8← 8, 1, 7	Ground					98 778.22	.5
DN ¹⁴ C ¹² S ³²	4- 312	9, , ← 8, ,	Excited					98 854.3	1.0
Br ⁷⁹ C ¹² N ¹⁴	4- 141	12←11	Ground					98 879.19	.20
Br ⁷⁹ C ¹² N ¹⁴	4- 141	12←11	Excited					99 108.45	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	12←11	Excited					99 109.06	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	12←11	Excited					99 110.12	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	12←11	Excited					99 110.75	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	12←11	Excited					99 203.06	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	12←11	Excited					99 204.09	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	12←11	Excited					99 204.70	
K ³⁹ Cl ³⁵	1-	13←12	Excited					99 316.456	.016
K ³⁹ Cl ³⁵	1-	13←12	Ground					99 929.450	.016
N ₂ ¹⁴ O ¹⁶	4-1811	4← 3	Ground					100 491.74	.20
N ₂ ¹⁴ O ¹⁶	4-1811	4← 3	Excited					100 531.65	
N ₂ ¹⁴ O ¹⁶	4-1811	4← 3	Excited					100 721.58	
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 1, 6← 7, 0, 7						100 838.05	.05
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	11, 9←10, 9	Ground					101 066.06	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	11, 8←10, 8	Ground					101 066.52	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	11, 7←10, 7	Ground					101 066.91	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	11, 6←10, 6	Ground					101 067.33	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	11, 5←10, 5	Ground					101 067.62	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	11, 3←10, 3	Ground					101 068.04	.20
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	11, 0←10, 0	Ground					101 068.35	.20
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 1, 5← 4, 1, 4	Ground					101 382.24	.5
F ¹⁹ HC ¹² O ¹⁶	4- 271	1, 1, 1← 0, 0, 0						101 550.36	.05
O ₃ ¹⁶	4-1841	4, 1, 3← 4, 0, 4	Ground					101 736.83	.14
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 0, 5← 4, 0, 4	Ground					101 963.49	.5
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 2, 4← 4, 2, 3	Ground					101 973.63	.5
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 2, 3← 4, 2, 2	Ground					101 975.19	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 3, 3← 4, 3, 2	Ground					101 981.97	1.0
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 3, 2← 4, 3, 1	Ground					101 981.97	1.0
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 4, 2← 4, 4, 1	Ground					101 988.27	1.0
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 4, 1← 4, 4, 0	Ground					101 988.27	1.0
C ¹² H ₃ F ¹⁹	4- 461	2, 1← 1, 1	Ground					102 140.86	.20
C ¹² H ₃ F ¹⁹	4- 461	2, 0← 1, 0	Ground					102 142.56	.20
DN ¹⁴ C ¹² O ¹⁶	4- 303	5, 1, 4← 4, 1, 3	Ground					102 551.73	.5
S ³² O ₂ ¹⁶	4-1831	10, 1, 9←10, 0,10	Ground					104 029.43	
S ³² O ₂ ¹⁶	4-1831	3, 1, 3← 2, 0, 2	Ground					104 033.53	
C ¹³ O ¹⁸	1-	1← 0	Ground					104 711.416	.008
HN ¹⁴ C ¹² S ³²	4- 311	9, 1, 9← 8, 1, 8	Ground					105 403.63	.5
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 406.7	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, 0, 9← 8, 0, 8	Ground					105 558.08	.5
F ¹⁹ DC ¹² O ¹⁶	4- 272	9, 1, 8← 9, 0, 9						105 584.79	.04
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 585.4	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, 2, 7← 8, 2, 6	Ground					105 595.61	.5
HN ¹⁴ C ¹² S ³²	4- 311	9, 2, 8← 8, 2, 7	Ground					105 595.61	.5
HN ¹⁴ C ¹² S ³²	4- 311	9, 3, 6← 8, 3, 5	Ground					105 609.18	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, 3, 7← 8, 3, 6	Ground					105 609.18	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Ground					105 631.7	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 640.1	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 672.8	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 698.6	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 730.5	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, 1, 8← 8, 1, 7	Ground					105 743.77	.5
HN ¹⁴ C ¹² S ³²	4- 311	9, 3, ← 8, 3,	Excited					105 748.3	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, 2, ← 8, 2,	Excited					105 749.3	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, 0, ← 8, 0,	Excited					105 756.8	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, 2, ← 8, 2,	Excited					105 764.9	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, 0, ← 8, 0,	Excited					105 765.8	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 802.2	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 810.0	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 831.6	1.0
HN ¹⁴ C ¹² S ³²	4- 311	9, , ← 8, ,	Excited					105 847.5	1.0
C ¹⁴ O ¹⁶	1-	1← 0	Ground					105 871.110	.004
C ¹² H ₃ Cl ³⁵	4- 421	4, 3← 3, 3	Ground	7/2		7/2		106 310.31	
C ¹² H ₃ Cl ³⁵	4- 421	6, 1← 5, 1	Ground	7/2		7/2		106 310.31	
C ¹² H ₃ Cl ³⁵	4- 421	4, 3← 3, 3	Ground	9/2		7/2		106 312.37	
C ¹² H ₃ Cl ³⁵	4- 421	4, 3← 3, 3	Ground	5/2		5/2		106 314.52	
C ¹² H ₃ Cl ³⁵	4- 421	4, 0← 3, 0	Ground	9/2		9/2		106 320.08	
C ¹² H ₃ Cl ³⁵	4- 421	4, 3← 3, 3	Ground	7/2		5/2		106 321.24	
C ¹² H ₃ Cl ³⁵	4- 421	4, 2← 3, 2	Ground	9/2		9/2		106 327.02	
C ¹² H ₃ Cl ³⁵	4- 421	4, 2← 3, 2	Ground	9/2		7/2		106 327.02	
C ¹² H ₃ Cl ³⁵	4- 421	4, 2← 3, 2	Ground	11/2		9/2		106 334.53	
C ¹² H ₃ Cl ³⁵	4- 421	4, 3← 3, 3	Ground	9/2		9/2		106 335.79	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ Cl ³⁵	4- 421	4, 1← 3, 1	Ground		9/2		7/2	106 335.79	
C ¹² H ₃ Cl ³⁵	4- 421	4, 1← 3, 1	Ground		5/2		3/2	106 336.59	
C ¹² H ₃ Cl ³⁵	4- 421	4, 0← 3, 0	Ground		5/2		3/2	106 336.59	
C ¹² H ₃ Cl ³⁵	4- 421	4, 0← 3, 0	Ground		7/2		5/2	106 336.59	
C ¹² H ₃ Cl ³⁵	4- 421	4, 1← 3, 1	Ground		11/2		9/2	106 337.70	
C ¹² H ₃ Cl ³⁵	4- 421	4, 0← 3, 0	Ground		9/2		7/2	106 338.75	
C ¹² H ₃ Cl ³⁵	4- 421	4, 0← 3, 0	Ground		11/2		9/2	106 338.75	
C ¹² H ₃ Cl ³⁵	4- 421	4, 1← 3, 1	Ground		7/2		7/2	106 341.52	
C ¹² H ₃ Cl ³⁵	4- 421	4, 0← 3, 0	Ground		7/2		7/2	106 345.33	
C ¹² H ₃ Cl ³⁵	4- 421	4, 1← 3, 1	Ground		5/2		5/2	106 350.77	
C ¹² H ₃ Cl ³⁵	4- 421	4, 0← 3, 0	Ground		5/2		5/2	106 355.35	
C ¹² H ₃ Cl ³⁵	4- 421	4, 3← 3, 3	Ground		11/2		9/2	106 392.24	
N ¹⁴ F ₃ ¹⁹	4-1651	5, 3← 4, 3	Ground					106 803.62	.20
N ¹⁴ F ₃ ¹⁹	4-1651	5, 2← 4, 2	Ground					106 804.54	.50
N ¹⁴ F ₃ ¹⁹	4-1651	5, 0← 4, 0	Ground					106 805.93	.20
F ¹⁹ HC ¹² O ¹⁶	4- 271	8, 1, 7← 8, 0, 8						107 362.11	.05
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 1, 5← 4, 1, 4						108 127.00	.65
DN ¹⁴ C ¹² S ³²	4- 312	10, 1,10← 9, 1, 9	Ground					109 200.75	.5
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 239.9	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 413.3	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 445.9	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, 1,10← 9, 0, 9	Ground					109 452.06	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 1, 5← 4, 1, 4	Ground					109 495.71	.5
DN ¹⁴ C ¹² S ³²	4- 312	10, 2, 9← 9, 2, 8	Ground					109 531.83	.5
DN ¹⁴ C ¹² S ³²	4- 312	10, 2, 8← 9, 2, 7	Ground					109 532.36	.5
DN ¹⁴ C ¹² S ³²	4- 312	10, 0, ← 9, 0,	Excited					109 537.4	.5
N ¹⁵ O ₂ ¹⁶	4-1802	12, 0,12←11, 1,11	Ground					109 559.23	
N ¹⁵ O ₂ ¹⁶	4-1802	12, 0,12←11, 1,11	Ground					109 576.98	
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 588.8	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, 3, 7← 9, 3, 6	Ground					109 597.60	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, 3, 8← 9, 3, 7	Ground					109 597.60	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 656.9	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 663.2	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 664.5	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 667.4	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 679.3	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 710.6	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 721.4	1.0
N ¹⁵ O ₂ ¹⁶	4-1802	12, 0,12←11, 1,11	Ground					109 743.01	
N ¹⁵ O ₂ ¹⁶	4-1802	12, 0,12←11, 1,11	Ground					109 743.83	
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 748.5	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, 1, 9← 9, 1, 8	Ground					109 752.49	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 1, ← 4, 1,	Excited					109 776.42	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 4, 2← 4, 4, 1	Ground		4		3	109 778.37	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 4, 2← 4, 4, 1	Ground		6		5	109 778.37	1.0

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 4, 1← 4, 4, 0	Ground	6		5		109 778.37	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 4, 1← 4, 4, 0	Ground	4		3		109 778.37	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 4, 1← 4, 4, 0	Ground	5		4		109 778.94	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 4, 2← 4, 4, 1	Ground	5		4		109 778.94	1.0
C ¹² O ¹⁸	1-	1← 0	Ground					109 782.182	.008
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 3, 3← 4, 3, 2	Ground	4		3		109 833.45	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 3, 3← 4, 3, 2	Ground	6		5		109 833.45	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 3, 2← 4, 3, 1	Ground	6		5		109 833.45	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 3, 2← 4, 3, 1	Ground	4		3		109 833.45	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 3, 3← 4, 3, 2	Ground	5		4		109 833.84	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 3, 2← 4, 3, 1	Ground	5		4		109 833.84	1.0
DN ¹⁴ C ¹² S ³²	4- 312	10, , ← 9, ,	Excited					109 837.2	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 2, 4← 4, 2, 3	Ground					109 872.60	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 2, 3← 4, 2, 2	Ground					109 872.99	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, , ← 4, ,	Excited					109 890.69	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 0, 5← 4, 0, 4	Ground					109 905.90	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, , ← 4, ,	Excited					109 958.67	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 0, ← 4, 0,	Excited					110 083.80	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 2, ← 4, 2,	Excited					110 086.08	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 3, ← 4, 3,	Excited					110 089.41	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 0, ← 4, 0,	Excited					110 104.11	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 2, ← 4, 2,	Excited					110 105.52	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 1, ← 4, 1,	Excited					110 164.08	1.0
C ¹³ O ¹⁶	1-	1← 0	Ground					110 201.370	.002
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 1, 4← 4, 1, 3	Ground					110 297.82	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 5← 5, 5	Ground					110 329.70	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 5← 5, 5	Ground					110 330.79	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 4← 5, 4	Ground					110 349.00	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 4← 5, 4	Ground					110 349.68	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 3← 5, 3	Ground					110 364.02	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 3← 5, 3	Ground					110 364.52	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 2← 5, 2	Ground					110 375.01	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 1← 5, 1	Ground					110 381.39	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 0← 5, 0	Ground					110 383.47	.25
HN ¹⁴ C ¹² O ¹⁶	4- 301	5, 1, ← 4, 1,	Excited					110 419.08	1.0
HN ₃ ¹⁴	4-1701	5, 1, 5← 4, 1, 4	Ground					110 608.76	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 1← 5, 1	Excited					110 609.77	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 5← 5, 5	Excited					110 637.22	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 4← 5, 4	Excited					110 660.88	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 3← 5, 3	Excited					110 680.36	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 5← 5, 5	Excited					110 684.52	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 2← 5, 2	Excited					110 697.07	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 4← 5, 4	Excited					110 698.62	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 1← 5, 1	Excited					110 706.25	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 3← 5, 3	Excited					110 709.40	.25

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 0← 5, 0	Excited					110 712.17	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 2← 5, 2	Excited					110 716.32	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 1← 5, 1	Excited					110 823.16	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, ← 5,	Excited					110 975.7	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, ← 5,	Excited					110 987.8	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, ← 5,	Excited					111 009.3	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, ← 5,	Excited					111 021.5	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, ← 5,	Excited					111 028.8	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 3← 5, 3	Excited					111 030.8	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, ← 5,	Excited					111 039.1	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 2← 5, 2	Excited					111 040.9	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 1← 5, 1	Excited					111 046.0	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, 0← 5, 0	Excited					111 047.4	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	6, ← 5,	Excited					111 049.4	.25
HN ₃ ¹⁴	4-1701	5, 4, 2← 4, 4, 1	Ground	4		3		111 504.67	.25
HN ₃ ¹⁴	4-1701	5, 4, 1← 4, 4, 0	Ground	5		4		111 506.13	.25
HN ₃ ¹⁴	4-1701	5, 4, 1← 4, 4, 0	Ground	6		5		111 506.13	.25
HN ₃ ¹⁴	4-1701	5, 3, 3← 4, 3, 2	Ground	4		3		111 536.98	.25
HN ₃ ¹⁴	4-1701	5, 3, 2← 4, 3, 1	Ground	6		5		111 536.98	.25
HN ₃ ¹⁴	4-1701	5, 3, 2← 4, 3, 1	Ground	5		4		111 537.86	.25
HN ₃ ¹⁴	4-1701	5, 2, 4← 4, 2, 3	Ground	4		3		111 557.82	.25
HN ₃ ¹⁴	4-1701	5, 2, 4← 4, 2, 3	Ground	6		5		111 557.82	.25
HN ₃ ¹⁴	4-1701	5, 2, 4← 4, 2, 3	Ground	5		4		111 558.09	.25
HN ₃ ¹⁴	4-1701	5, 2, 3← 4, 2, 2	Ground	6		5		111 564.52	.25
HN ₃ ¹⁴	4-1701	5, 2, 3← 4, 2, 2	Ground	4		3		111 564.52	.25
HN ₃ ¹⁴	4-1701	5, 2, 3← 4, 2, 2	Ground	5		4		111 564.81	.25
HN ₃ ¹⁴	4-1701	5, 0, 5← 4, 0, 4	Ground					111 569.92	.25
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 0, 5← 4, 0, 4						111 746.65	.68
N ¹⁵ O ₂ ¹⁶	4-1802	3, 1, 3← 4, 0, 4	Ground					111 969.09	
N ¹⁵ O ₂ ¹⁶	4-1802	3, 1, 3← 4, 0, 4	Ground					112 040.39	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 2, 4← 4, 2, 3						112 287.29	.68
C ¹² O ¹⁷	1-	1← 0	Ground					112 359.228	.020
N ¹⁵ O ₂ ¹⁶	4-1802	Not Reported						112 408.63	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 4, 2← 4, 4, 1						112 432.60	.68
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 4, 1← 4, 4, 0						112 432.60	.68
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 3, 3← 4, 3, 2						112 459.70	.68
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 3, 2← 4, 3, 1						112 467.04	.68
HN ₃ ¹⁴	4-1701	5, 1, 4← 4, 1, 3	Ground					112 532.50	.25
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 2, 3← 4, 2, 2						112 891.75	.68
N ¹⁵ O ₂ ¹⁶	4-1802	3, 1, 3← 4, 0, 4	Ground					113 362.39	
N ¹⁵ O ₂ ¹⁶	4-1802	3, 1, 3← 4, 0, 4	Ground					113 409.41	
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 1, 6← 5, 1, 5	Ground					113 727.20	.05
F ¹⁹ DC ¹² O ¹⁶	4- 272	3, 1, 3← 2, 0, 2						113 911.30	.04
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 1, 5← 4, 1, 4	Ground					114 632.32	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	5, 1, 5← 4, 1, 4	Ground					114 867.30	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F ₁ '	F'	F ₁	F		
As ⁷⁵ D ₃	4- 33	1, 0← 0, 0	Ground		3/2		3/2	114 918.94	.3
As ⁷⁵ D ₃	4- 33	1, 0← 0, 0	Ground		5/2		3/2	114 960.57	.3
As ⁷⁵ D ₃	4- 33	1, 0← 0, 0	Ground		1/2		3/2	114 993.50	.3
F ¹⁹ HC ¹² O ¹⁶	4- 271	9, 1, 8← 9, 0, 9						114 993.80	.05
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 3, 3← 4, 3, 2	Ground	4			3	115 164.13	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 3, 3← 4, 3, 2	Ground	6			5	115 164.13	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 3, 2← 4, 3, 1	Ground	5			4	115 164.96	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 2, 4← 4, 2, 3	Ground	6			5	115 201.66	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 2, 4← 4, 2, 3	Ground	4			3	115 201.66	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 2, 4← 4, 2, 3	Ground	5			4	115 202.04	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 2, 3← 4, 2, 2	Ground	6			5	115 203.02	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 2, 3← 4, 2, 2	Ground	4			3	115 203.02	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 2, 3← 4, 2, 2	Ground	5			4	115 203.44	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 0, 5← 4, 0, 4	Ground					115 230.58	.15
C ¹² O ¹⁶	1-	1← 0	Ground					115 271.201	
HN ¹⁵ N ₂ ¹⁴	4-1704	5, 3, 2← 4, 3, 1	Ground					115 405.63	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	5, 3, 3← 4, 3, 2	Ground					115 405.63	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	5, 2, 4← 4, 2, 3	Ground					115 443.81	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	5, 2, 3← 4, 2, 2	Ground					115 445.25	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	5, 0, 5← 4, 0, 4	Ground					115 473.18	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	5, 1, 4← 4, 1, 3	Ground					115 815.77	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	5, 1, 4← 4, 1, 3	Ground					116 065.79	.15
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	5, 1, 4← 4, 1, 3						116 311.35	.70
Cl ³⁷ C ¹² N ¹⁴	4- 173	10← 9	Ground					116 938.45	.25
S ³² O ₂ ¹⁶	4-1831	8, 0, 8← 7, 1, 7	Ground					116 980.60	
N ¹⁴ D ₃	4-1775	Not Reported	Excited					117 000.	
HN ¹⁴ C ¹² S ³²	4- 311	10, 1, 10← 9, 1, 9	Ground					117 114.04	.5
DN ¹⁴ C ¹² S ³²	4- 312	10, 1, 10← 9, 1, 9	Excited					117 117.5	.5
HN ¹⁴ C ¹² S ³²	4- 311	10, 1, 10← 9, 1, 9	Excited					117 117.5	1.0
Cl ³⁷ C ¹² N ¹⁴	4- 173	10← 9	Excited					117 186.54	
HN ¹⁴ C ¹² S ³²	4- 311	10, 0, 10← 9, 0, 9	Ground					117 285.45	.5
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 315.4	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, 2, 8← 9, 2, 7	Ground					117 327.47	.5
HN ¹⁴ C ¹² S ³²	4- 311	10, 2, 9← 9, 2, 8	Ground					117 327.47	.5
Cl ³⁷ C ¹² N ¹⁴	4- 173	10← 9	Excited					117 329.90	
HN ¹⁴ C ¹² S ³²	4- 311	10, 3, 8← 9, 3, 7	Ground					117 342.63	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, 3, 7← 9, 3, 6	Ground					117 342.63	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, 4, ← 9, 4,	Ground					117 367.94	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 371.3	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, 0, ← 9, 0,	Excited					117 377.2	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 413.8	1.0
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 6, 6← 5, 6, 5	Ground					117 431.32	.05
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 444.9	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 479.9	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, 1, 9← 9, 1, 8	Ground					117 491.95	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
HN ¹⁴ C ¹² S ³²	4- 311	10, 0, ← 9, 0,	Excited					117 506.6	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, 0, ← 9, 0,	Excited					117 516.8	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, 0, ← 9, 0,	Excited					117 523.4	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 562.5	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 589.8	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 606.8	1.0
HN ¹⁴ C ¹² S ³²	4- 311	10, , ← 9, ,	Excited					117 615.4	1.0
O ₃ ¹⁶	4-1841	1, 1, 1← 0, 0, 0	Ground					118 364.3	.5
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 2, 5← 5, 2, 4	Ground					118 383.85	.05
HN ₃ ¹⁴	4-1701	5, 1, 5← 4, 1, 4	Ground					118 435.82	.25
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 5, ← 5, 5,	Ground					118 623.85	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 4, 2← 5, 4, 1	Ground					118 644.25	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 4, 3← 5, 4, 2	Ground					118 644.35	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 3, 4← 5, 3, 3	Ground					118 693.10	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 3, 3← 5, 3, 2	Ground					118 715.90	.05
O ₂ ¹⁶	1-	1, 1← 0, 1	Ground					118 750.5	.5
HN ₃ ¹⁴	4-1701	5, 4, 2← 4, 4, 1	Ground					118 946.42	.25
HN ₃ ¹⁴	4-1701	5, 4, 1← 4, 4, 0	Ground					118 946.42	.25
HN ₃ ¹⁴	4-1701	5, 3, 3← 4, 3, 2	Ground	4		3		119 003.46	.25
HN ₃ ¹⁴	4-1701	5, 3, 2← 4, 3, 1	Ground	6		5		119 003.46	.25
HN ₃ ¹⁴	4-1701	5, 3, 2← 4, 3, 1	Ground	5		4		119 004.33	.25
HN ₃ ¹⁴	4-1701	5, 2, 4← 4, 2, 3	Ground					119 043.41	.25
HN ₃ ¹⁴	4-1701	5, 2, 3← 4, 2, 2	Ground					119 044.95	.25
HN ₃ ¹⁴	4-1701	5, 0, 5← 4, 0, 4	Ground					119 074.12	.25
F ¹⁹ DC ¹² O ¹⁶	4- 272	10, 1, 9←10, 0,10						119 163.65	.04
F ¹⁹ HC ¹² O ¹⁶	4- 271	4, 2, 3← 5, 1, 4						119 298.55	.05
CF ³⁵ C ¹² N ¹⁴	4- 171	10← 9	Ground					119 409.82	.25
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	13, ←12,	Ground					119 441.32	.45
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 2, 4← 5, 2, 3	Ground					119 474.65	.05
C ¹² H ₃ C ¹² :C ¹² H	4-1041	7, 6← 6, 6						119 556.00	.25
C ¹² H ₃ C ¹² :C ¹² H	4-1041	7, 5← 6, 5						119 581.12	.25
C ¹² H ₃ C ¹² :C ¹² H	4-1041	7, 4← 6, 4						119 601.62	.25
C ¹² H ₃ C ¹² :C ¹² H	4-1041	7, 3← 6, 3						119 617.67	.25
C ¹² H ₃ C ¹² :C ¹² H	4-1041	7, 2← 6, 2						119 629.13	.25
C ¹² H ₃ C ¹² :C ¹² H	4-1041	7, 1← 6, 1						119 635.97	.25
C ¹² H ₃ C ¹² :C ¹² H	4-1041	7, 0← 6, 0						119 638.22	.25
CF ³⁵ C ¹² N ¹⁴	4- 171	10← 9	Excited					119 662.15	
HN ₃ ¹⁴	4-1701	5, 1, 4← 4, 1, 3	Ground					119 698.95	.25
CF ³⁵ C ¹² N ¹⁴	4- 171	10← 9	Excited					119 811.35	
O ¹⁶ C ¹² Sc ⁸²	4- 548	15←14	Ground					119 812.89	.25
C ¹² H ₃ I ¹²⁷	4- 481	8, 6← 7, 6	Ground	17/2		15/2		119 858.79	
C ¹² H ₃ I ¹²⁷	4- 481	8, 6← 7, 6	Ground	19/2		17/2		119 893.31	
C ¹² H ₃ I ¹²⁷	4- 481	8, 6← 7, 6	Ground	15/2		13/2		119 897.38	
C ¹² H ₃ I ¹²⁷	4- 481	8, 5← 7, 5	Ground	17/2		15/2		119 904.58	
C ¹² H ₃ I ¹²⁷	4- 481	8, 0← 7, 0	Ground	17/2		17/2		119 919.48	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ I ¹²⁷	4- 481	8, 1← 7, 1	Ground	17/2		17/2		119 920.02	
C ¹² H ₃ I ¹²⁷	4- 481	8, 2← 7, 2	Ground	17/2		17/2		119 921.72	
C ¹² H I ¹²⁷	4- 481	8, 5← 7, 5	Ground	15/2		13/2		119 928.43	
C ¹² H ₃ I ¹²⁷	4- 481	8, 5← 7, 5	Ground	19/2		17/2		119 930.63	
C ¹² H ₃ I ¹²⁷	4- 481	8, 6← 7, 6	Ground	17/2		17/2		119 941.94	
C ¹² H ₃ I ¹²⁷	4- 481	8, 4← 7, 4	Ground	17/2		15/2		119 941.94	
C ¹² H ₃ I ¹²⁷	4- 481	8, 4← 7, 4	Ground	15/2		13/2		119 953.94	
C ¹² H ₃ I ¹²⁷	4- 481	8, 4← 7, 4	Ground	19/2		17/2		119 961.23	
C ¹² H ₃ I ¹²⁷	4- 481	8, 3← 7, 3	Ground	17/2		15/2		119 971.10	
C ¹² H ₃ I ¹²⁷	4- 481	8, 3← 7, 3	Ground	15/2		13/2		119 973.48	
C ¹² H ₃ I ¹²⁷	4- 481	8, 6← 7, 6	Ground	13/2		11/2		119 980.18	
C ¹² H ₃ I ¹²⁷	4- 481	8, 5← 7, 5	Ground	13/2		11/2		119 984.47	
C ¹² H ₃ I ¹²⁷	4- 481	8, 3← 7, 3	Ground	19/2		17/2		119 985.10	
C ¹² H ₃ I ¹²⁷	4- 481	8, 2← 7, 2	Ground	15/2		13/2		119 987.78	
C ¹² H ₃ I ¹²⁷	4- 481	8, 4← 7, 4	Ground	13/2		11/2		119 987.78	
C ¹² H ₃ I ¹²⁷	4- 481	8, 3← 7, 3	Ground	13/2		11/2		119 990.79	
C ¹² H ₃ I ¹²⁷	4- 481	8, 2← 7, 2	Ground	17/2		15/2		119 991.88	
C ¹² H ₃ I ¹²⁷	4- 481	8, 2← 7, 2	Ground	13/2		11/2		119 992.78	
C ¹² H ₃ I ¹²⁷	4- 481	8, 1← 7, 1	Ground	13/2		11/2		119 993.97	
C ¹² H ₃ I ¹²⁷	4- 481	8, 0← 7, 0	Ground	13/2		11/2		119 994.36	
C ¹² H ₃ I ¹²⁷	4- 481	8, 1← 7, 1	Ground	15/2		13/2		119 996.05	
C ¹² H ₃ I ¹²⁷	4- 481	8, 0← 7, 0	Ground	15/2		13/2		119 998.90	
C ¹² H ₃ I ¹²⁷	4- 481	8, 0← 7, 0	Ground	11/2		9/2		120 000.34	
C ¹² H ₃ I ¹²⁷	4- 481	8, 2← 7, 2	Ground	19/2		17/2		120 002.44	
C ¹² H ₃ I ¹²⁷	4- 481	8, 1← 7, 1	Ground	11/2		9/2		120 002.44	
C ¹² H ₃ I ¹²⁷	4- 481	8, 1← 7, 1	Ground	17/2		15/2		120 004.25	
C ¹² H ₃ I ¹²⁷	4- 481	8, 0← 7, 0	Ground	17/2		15/2		120 008.43	
C ¹² H ₃ I ¹²⁷	4- 481	8, 2← 7, 2	Ground	11/2		9/2		120 009.33	
C ¹² H ₃ I ¹²⁷	4- 481	8, 0← 7, 0	Ground	21/2		19/2		120 012.42	
C ¹² H ₃ I ¹²⁷	4- 481	8, 1← 7, 1	Ground	19/2		17/2		120 012.42	
C ¹² H ₃ I ¹²⁷	4- 481	8, 1← 7, 1	Ground	21/2		19/2		120 012.99	
C ¹² H ₃ I ¹²⁷	4- 481	8, 4← 7, 4	Ground	13/2		13/2		120 014.89	
C ¹² H ₃ I ¹²⁷	4- 481	8, 2← 7, 2	Ground	21/2		19/2		120 014.89	
C ¹² H ₃ I ¹²⁷	4- 481	8, 0← 7, 0	Ground	19/2		17/2		120 015.95	
C ¹² H ₃ I ¹²⁷	4- 481	8, 3← 7, 3	Ground	21/2		19/2		120 017.88	
C ¹² H ₃ I ¹²⁷	4- 481	8, 3← 7, 3	Ground	11/2		9/2		120 020.67	
C ¹² H ₃ I ¹²⁷	4- 481	8, 4← 7, 4	Ground	21/2		19/2		120 022.18	
C ¹² H ₃ I ¹²⁷	4- 481	8, 5← 7, 5	Ground	21/2		19/2		120 027.60	
C ¹² H ₃ I ¹²⁷	4- 481	8, 6← 7, 6	Ground	21/2		19/2		120 034.26	
C ¹² H ₃ I ¹²⁷	4- 481	8, 4← 7, 4	Ground	11/2		9/2		120 036.54	
C ¹² H ₃ I ¹²⁷	4- 481	8, 5← 7, 5	Ground	11/2		9/2		120 057.13	
C ¹² H ₃ I ¹²⁷	4- 481	8, 1← 7, 1	Ground	15/2		15/2		120 070.89	
C ¹² H ₃ I ¹²⁷	4- 481	8, 6← 7, 6	Ground	11/2		9/2		120 082.48	
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 1, 6← 5, 1, 5	Ground					120 407.60	.2
O ¹⁶ C ¹² Se ⁸⁰	4- 547	15←14	Ground					120 520.40	.25

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
O ¹⁶ C ¹² Se ⁸⁰	4- 547	15←14	Excited					120 679.98	
O ¹⁶ C ¹² Se ⁸⁰	4- 547	15←14	Excited					120 775.11	
HDO ¹⁶	4-1712	5, 1, 5← 4, 2, 2	Ground					120 778.2	
O ¹⁶ C ¹² Se ⁷⁸	4- 545	15←14	Ground					121 263.28	.25
O ¹⁶ C ¹² S ³²	4- 521	10← 9	Ground					121 624.63	.25
O ¹⁶ C ¹² S ³⁴	4- 523	10← 9	Ground					121 624.79	.25
O ¹⁶ C ¹² Se ⁷⁷	4- 544	15←14	Ground					121 647.98	.25
O ¹⁶ C ¹² Se ⁷⁶	4- 543	15←14	Ground					122 043.90	.25
S ³² P ³¹ F ₃ ¹⁹	4-1691	23,15←22,15						122 219.00	.30
S ³² P ³¹ F ₃ ¹⁹	4-1691	23,12←22,12						122 225.50	.30
S ³² P ³¹ F ₃ ¹⁹	4-1691	23, 9←22, 9						122 231.30	.30
S ³² P ³¹ F ₃ ¹⁹	4-1691	23, 5←22, 5						122 235.80	.30
S ³² P ³¹ F ₃ ¹⁹	4-1691	23, 6←22, 6						122 235.80	.30
S ³² P ³¹ F ₃ ¹⁹	4-1691	23, 0←22, 0						122 237.90	.30
F ¹⁹ HC ¹² O ¹⁶	4- 271	2, 1, 2← 1, 0, 1						122 343.95	.05
C ¹² D ₃ F ¹⁹	4- 462	3, 2← 2, 2	Ground					122 690.02	.30
C ¹² D ₃ F ¹⁹	4- 462	3, 1← 2, 1	Ground					122 694.20	.30
C ¹² D ₃ F ¹⁹	4- 462	3, 0← 2, 0	Ground					122 695.50	.30
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 1, 5← 5, 1, 4	Ground					122 813.35	.05
Br ⁸¹ C ¹² N ¹⁴	4- 142	15←14	Ground					122 892.50	.25
Br ⁸¹ C ¹² N ¹⁴	4- 142	15←14	Excited					123 178.33	
Br ⁸¹ C ¹² N ¹⁴	4- 142	15←14	Excited					123 179.40	
Br ⁸¹ C ¹² N ¹⁴	4- 142	15←14	Excited					123 294.38	
Br ⁸¹ C ¹² N ¹⁴	4- 142	15←14	Excited					123 295.31	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	15←14	Ground					123 594.73	.25
F ¹⁹ HC ¹² O ¹⁶	4- 271	10, 1, 9←10, 0,10						123 812.35	.05
Br ⁷⁹ C ¹² N ¹⁴	4- 141	15←14	Excited					123 881.78	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	15←14	Excited					123 882.90	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	15←14	Excited					123 999.22	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	15←14	Excited					124 000.30	
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 0, 6← 5, 0, 5	Ground					124 685.34	.2
P ³¹ F ₃ ¹⁹	4-1681	8, 0← 7, 0	Ground					125 103.89	.20
P ³¹ F ₃ ¹⁹	4-1681	8, 3← 7, 3	Ground					125 105.60	.20
P ³¹ F ₃ ¹⁹	4-1681	8, 4← 7, 4	Ground					125 106.85	.25
P ³¹ F ₃ ¹⁹	4-1681	8, 5← 7, 5	Ground					125 108.60	.20
P ³¹ F ₃ ¹⁹	4-1681	8, 6← 7, 6	Ground					125 110.64	.30
N ₂ ¹⁴ O ¹⁶	4-1811	5← 4	Ground					125 613.73	.25
N ₂ ¹⁴ O ¹⁶	4-1811	5← 4	Excited					125 663.69	
N ₂ ¹⁴ O ¹⁶	4-1811	5← 4	Excited					125 900.99	
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 2, 5← 5, 2, 4	Ground					127 342.80	.2
H ₂ Se ⁸²	4-1745	1, 1, 0← 1, 0, 1	Ground					127 860.35	
H ₂ Se ⁸⁰	4-1744	1, 1, 0← 1, 0, 1	Ground					127 973.40	
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 5, ← 5, 5,	Ground					127 996.80	.2
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 4, 3← 5, 4, 2	Ground					128 075.90	.2
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 4, 2← 5, 4, 1	Ground					128 077.64	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₂ Se ⁷⁸	4-1743	1, 1, 0← 1, 0, 1	Ground					128 098.70	
H ₂ Se ⁷⁷	4-1742	1, 1, 0← 1, 0, 1	Ground					128 155.40	
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 3, 4← 5, 3, 3	Ground					128 203.04	.2
H ₂ Se ⁷⁶	4-1741	1, 1, 0← 1, 0, 1	Ground					128 219.10	
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 3, 3← 5, 3, 2	Ground					128 336.34	.2
S ³² O ₂ ⁶	4-1831	12, 2, 10←12, 1, 11	Ground					128 605.18	
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	14, ←13,	Ground					128 626.60	.20
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 6← 6, 6	Ground					128 689.48	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 6← 6, 6	Ground					128 690.57	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 5← 6, 5	Ground					128 717.18	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 5← 6, 5	Ground					128 717.69	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 4← 6, 4	Ground					128 739.39	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 4← 6, 4	Ground					128 739.91	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 3← 6, 3	Ground					128 757.03	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 2← 6; 2	Ground					128 769.52	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 1← 6, 1	Ground					128 777.02	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	7, 0← 6, 0	Ground					128 779.43	.25
I ¹²⁷ C ¹² N ¹⁴	4- 511	20←19	Ground					129 000.	
S ³² O ₂ ⁶	4-1831	10, 2, 8←10, 1, 9	Ground					129 514.86	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 1, 6← 5, 1, 5						129 671.70	.78
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 2, 4← 5, 2, 3	Ground					130 411.85	.2
S ³² O ₂ ⁶	4-1831	12, 1, 11←12, 0, 12	Ground					131 014.86	
TI ¹²⁷	1-	1← 0	Ground	5/2		5/2		131 210.20	.25
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 1, 6← 5, 1, 5	Ground					131 394.40	.5
TI ¹²⁷	1-	1← 0	Ground	7/2		5/2		131 592.95	.25
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 5, 1← 5, 5, 0	Ground					131 640.60	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 5, 2← 5, 5, 1	Ground					131 640.60	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 1, ← 5, 1,	Excited					131 730.84	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 4, 3← 5, 4, 2	Ground	5		4		131 733.64	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 4, 3← 5, 4, 2	Ground	7		6		131 733.64	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 4, 2← 5, 4, 1	Ground	5		4		131 733.64	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 4, 2← 5, 4, 1	Ground	7		6		131 733.64	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 4, 2← 5, 4, 1	Ground	6		5		131 734.00	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 4, 3← 5, 4, 2	Ground	6		5		131 734.00	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 3, 3← 5, 3, 2	Ground					131 799.12	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 3, 4← 5, 3, 3	Ground					131 799.12	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 2, 5← 5, 2, 4	Ground					131 845.56	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 2, 4← 5, 2, 3	Ground					131 846.28	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, , ← 5, ,	Excited					131 863.33	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 0, 6← 5, 0, 5	Ground					131 885.52	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, , ← 5, ,	Excited					131 952.11	1.0
F ¹⁹ DC ¹² O ¹⁶	4- 272	4, 1, 4← 3, 0, 3						132 067.57	.04
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 0, ← 5, 0,	Excited					132 099.82	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 2, ← 5, 2,	Excited					132 102.88	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 3, ← 5, 3,	Excited					132 106.60	1.0

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 0, ← 5, 0,	Excited					132 115.04	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 2, ← 5, 2,	Excited					132 125.44	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 1, ← 5, 1,	Excited					132 195.68	1.0
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 1, 5← 5, 1, 4	Ground					132 356.76	.5
HN ¹⁴ C ¹² O ¹⁶	4- 301	6, 1, ← 5, 1,	Excited					132 500.92	1.0
HN ₃ ¹⁴	4-1701	6, 1, 6← 5, 1, 5	Ground					132 728.67	.25
DC ¹² O ¹⁶ O ¹⁶ D	3- 74	6, 1, 5← 5, 1, 4	Ground					133 623.69	.2
HN ₃ ¹⁴	4-1701	6, 5, 1← 5, 5, 0	Ground					133 756.98	.25
HN ₃ ¹⁴	4-1701	6, 5, 2← 5, 5, 1	Ground					133 756.98	.25
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 0, 6← 5, 0, 5						133 767.06	.81
HN ₃ ¹⁴	4-1701	6, 4, 3← 5, 4, 2	Ground					133 805.16	.25
HN ₃ ¹⁴	4-1701	6, 4, 2← 5, 4, 1	Ground					133 805.16	.25
HN ₃ ¹⁴	4-1701	6, 3, 4← 5, 3, 3	Ground					133 844.21	.25
HN ₃ ¹⁴	4-1701	6, 3, 3← 5, 3, 2	Ground					133 844.21	.25
HN ₃ ¹⁴	4-1701	6, 2, 5← 5, 2, 4	Ground					133 867.80	.25
HN ₃ ¹⁴	4-1701	6, 2, 4← 5, 2, 3	Ground					133 879.14	.25
HN ₃ ¹⁴	4-1701	6, 0, 6← 5, 0, 5	Ground					133 879.14	.25
F ¹⁹ DC ¹² O ¹⁶	4- 272	11, 1,10←11, 0,11						134 614.08	.04
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 2, 5← 5, 2, 4						134 686.20	.82
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 5, 2← 5, 5, 1						134 920.32	.82
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 5, 1← 5, 5, 0						134 920.32	.82
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 4, 2← 5, 4, 1						134 938.26	.82
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 4, 3← 5, 4, 2						134 938.26	.82
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 3, 4← 5, 3, 3						134 985.36	.82
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 3, 3← 5, 3, 2						135 004.74	.82
HN ₃ ¹⁴	4-1701	6, 1, 5← 5, 1, 4	Ground.					135 036.98	.25
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 2, 4← 5, 2, 3						135 737.70	.82
C ¹² H ₃ C ¹² :C ¹² H	4-1041	8, 7← 7, 7						136 600.15	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	8, 6← 7, 6						136 634.03	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	8, 5← 7, 5						136 662.74	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	8, 4← 7, 4						136 686.19	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	8, 3← 7, 3						136 704.48	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	8, 2← 7, 2						136 717.60	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	8, 1← 7, 1						136 725.36	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	8, 0← 7, 0						136 727.93	.30
HN ₂ ¹⁴ N ¹⁵	4-1703	6, 1, 6← 5, 1, 5	Ground					137 557.30	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 1, 6← 5, 1, 5	Ground					137 839.42	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	6, 3, 4← 5, 3, 3	Ground					138 195.85	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	6, 3, 3← 5, 3, 2	Ground					138 195.85	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	6, 2, 5← 5, 2, 4	Ground					138 240.77	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	6, 2, 4← 5, 2, 3	Ground					138 243.25	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	6, 0, 6← 5, 0, 5	Ground					138 274.77	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 4, 3← 5, 4, 2	Ground					138 420.28	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 4, 2← 5, 4, 1	Ground					138 420.28	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 3, 4← 5, 3, 3	Ground					138 485.62	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 3, 3←5, 3, 2	Ground					138 485.62	.15
HDO ¹⁶	4-1712	6, 1, 6←5, 2, 3	Ground					138 530.4	
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 2, 5←5, 2, 4	Ground					138 531.21	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 2, 4←5, 2, 3	Ground					138 533.67	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 0, 6←5, 0, 5	Ground					138 565.84	.15
P ³¹ D ₃	4-1784	1, 0←0, 0	Ground					138 938.14	.30
HN ₂ ¹⁴ N ¹⁵	4-1703	6, 1, 5←5, 1, 4	Ground					138 977.54	.15
F ¹⁹ HC ¹² O ¹⁶	4- 271	9, 0, 9←8, 1, 8						138 988.38	.05
HN ¹⁵ N ₂ ¹⁴	4-1704	6, 1, 5←5, 1, 4	Ground					139 277.82	.15
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	6, 1, 5←5, 1, 4						139 481.70	.84
Cl ³⁷ C ¹² N ¹⁴	4- 173	12←11	Ground					140 322.75	.30
F ¹⁹ DC ¹² O ¹⁶	4- 272	8, 2, 6←8, 1, 7						140 340.46	.04
Cl ³⁷ C ¹² N ¹⁴	4- 173	12←11	Excited					140 620.55	
Cl ³⁷ C ¹² N ¹⁴	4- 173	12←11	Excited					140 792.59	
HC ¹² HO ¹⁶	4- 381	2, 1, 2←1, 1, 1	Ground					140 839.3	.70
F ¹⁹ DC ¹² O ¹⁶	4- 272	5, 3, 2←6, 2, 5						141 567.45	.04
H ₂ Se ⁸²	4-1745	2, 2, 0←2, 1, 1	Ground					141 889.02	
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 1, 7←6, 1, 6	Ground					141 932.08	.5
HN ₃ ¹⁴	4-1701	6, 1, 6←5, 1, 5	Ground					142 121.48	.25
H ₂ Se ⁸⁰	4-1744	2, 2, 0←2, 1, 1	Ground					142 171.86	
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	5, 1, 5←4, 0, 4	Ground					142 347.30	.05
F ¹⁹ HC ¹² O ¹⁶	4- 271	3, 1, 3←2, 0, 2						142 462.44	.05
H ₂ Se ⁷⁸	4-1743	2, 2, 0←2, 1, 1	Ground					142 469.58	
H ₂ Se ⁷⁷	4-1742	2, 2, 0←2, 1, 1	Ground					142 623.48	
HN ₃ ¹⁴	4-1701	6, 5, 1←5, 5, 0	Ground					142 644.26	.25
HN ₃ ¹⁴	4-1701	6, 5, 2←5, 5, 1	Ground					142 644.26	.25
HN ₃ ¹⁴	4-1701	6, 4, 3←5, 4, 2	Ground		5		4	142 734.66	.25
HN ₃ ¹⁴	4-1701	6, 4, 2←5, 4, 1	Ground		7		6	142 734.66	.25
HN ₃ ¹⁴	4-1701	6, 4, 2←5, 4, 1	Ground		6		5	142 735.63	.25
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 0, 7←6, 0, 6	Ground					142 744.44	.5
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 2, 6←6, 2, 5	Ground					142 760.57	.5
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 2, 5←6, 2, 4	Ground					142 764.97	.5
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 3, 4←6, 3, 3	Ground					142 773.02	1.0
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 3, 5←6, 3, 4	Ground					142 773.02	1.0
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 4, 3←6, 4, 2	Ground					142 782.23	1.0
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 4, 4←6, 4, 3	Ground					142 782.23	1.0
H ₂ Se ⁷⁶	4-1741	2, 2, 0←2, 1, 1	Ground					142 783.02	
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 5, 3←6, 5, 2	Ground					142 785.65	1.0
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 5, 2←6, 5, 1	Ground					142 785.65	1.0
HN ₃ ¹⁴	4-1701	6, 3, 3←5, 3, 2	Ground					142 803.67	.25
HN ₃ ¹⁴	4-1701	6, 3, 4←5, 3, 3	Ground					142 803.67	.25
HN ₃ ¹⁴	4-1701	6, 2, 5←5, 2, 4	Ground					142 851.03	.25
HN ₃ ¹⁴	4-1701	6, 2, 4←5, 2, 3	Ground					142 853.84	.25
HN ₃ ¹⁴	4-1701	6, 0, 6←5, 0, 5	Ground					142 886.92	.25
Cl ³⁵ C ¹² N ¹⁴	4- 171	12←11	Ground					143 288.45	.30

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 2, 5← 7, 1, 6						143 547.24	.04
DN ¹⁴ C ¹² O ¹⁶	4- 303	7, 1, 6← 6, 1, 5	Ground					143 569.77	.5
Cl ³⁵ C ¹² N ¹⁴	4- 171	12←11	Excited					143 591.01	
HN ₃ ¹⁴	4-1701	6, 1, 5← 5, 1, 4	Ground					143 637.49	.25
HDO ¹⁶	4-1712	4, 2, 2← 4, 2, 3	Ground					143 727.2	
Cl ³⁵ C ¹² N ¹⁴	4- 171	12←11	Excited					143 770.23	
O ¹⁶ C ¹² Se ⁸²	4- 548	18←17	Ground					143 770.82	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 0← 9, 0	Ground					144 130.75	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 1← 9, 1	Ground					144 131.02	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 2← 9, 2	Ground					144 131.75	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 3← 9, 3	Ground					144 132.99	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 4← 9, 4	Ground					144 134.75	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 5← 9, 5	Ground					144 137.00	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 6← 9, 6	Ground					144 139.76	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 7← 9, 7	Ground					144 143.00	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 8← 9, 8	Ground					144 146.72	.30
Si ²⁸ F ₃ ¹⁹ H	4-1641	10, 9← 9, 9	Ground					144 151.04	.30
O ¹⁶ C ¹² Se ⁸⁰	4- 547	18←17	Ground					144 619.81	.30
O ¹⁶ C ¹² Se ⁸⁰	4- 547	18←17	Excited					144 811.06	
DC ¹² N ¹⁴	4- 292	2← 1	Ground					144 827.86	.30
C ¹² HF ₃ ¹⁹	4- 281	7, 0← 6, 0	Ground					144 868.57	.30
C ¹² HF ₃ ¹⁹	4- 281	7, 1← 6, 1	Ground					144 868.82	.30
C ¹² HF ₃ ¹⁹	4- 281	7, 2← 6, 2	Ground					144 869.58	.30
C ¹² HF ₃ ¹⁹	4- 281	7, 3← 6, 3	Ground					144 870.83	.30
C ¹² HF ₃ ¹⁹	4- 281	7, 4← 6, 4	Ground					144 872.60	.30
C ¹² HF ₃ ¹⁹	4- 281	7, 5← 6, 5	Ground					144 874.89	.30
C ¹² HF ₃ ¹⁹	4- 281	7, 6← 6, 6	Ground					144 877.70	.30
O ¹⁶ C ¹² Se ⁸⁰	4- 547	18←17	Excited					144 925.26	
N ¹⁵ O ¹⁶	1-	3/2← 1/2	Ground	1		1		144 927.81	0.25
N ¹⁵ O ¹⁶	1-	3/2← 1/2	Ground	1		0		144 946.34	0.25
N ¹⁵ O ¹⁶	1-	3/2← 1/2	Ground	2		1		144 976.00	0.25
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 1, 7← 6, 1, 6						144 988.68	.04
N ¹⁵ O ¹⁶	1-	3/2← 1/2	Ground	1		0		145 236.09	0.25
N ¹⁵ O ¹⁶	1-	3/2← 1/2	Ground	2		1		145 307.81	0.25
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 1, 7← 6, 1, 6	Ground					145 312.14	.2
N ¹⁵ O ¹⁶	1-	3/2← 1/2	Ground	1		1		145 428.07	0.25
O ¹⁶ C ¹² Se ⁷⁸	4- 545	18←17	Ground					145 511.08	.30
HC ¹² HO ¹⁶	4- 381	2, 0, 2← 1, 0, 1	Ground					145 603.1	.73
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 1, 7← 6, 1, 6	Ground					145 882.95	.2
O ¹⁶ C ¹² S ³²	4- 521	12←11	Ground					145 946.79	.30
O ¹⁶ C ¹² Se ⁷⁷	4- 544	18←17	Ground					145 972.74	.30
O ¹⁶ C ¹² Se ⁷⁶	4- 543	18←17	Ground					146 447.90	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16,15←15,15	Ground					146 990.43	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16,14←15,14	Ground					146 991.67	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16,13←15,13	Ground					146 992.79	.30

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F	Frequency MHz	Acc. ±MHz
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16,12←15,12	Ground		146 993.83	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16,11←15,11	Ground		146 994.77	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16,10←15,10	Ground		146 995.62	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 9←15, 9	Ground		146 996.38	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 8←15, 8	Ground		146 997.06	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 7←15, 7	Ground		146 997.65	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 6←15, 6	Ground		146 998.02	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 5←15, 5	Ground		146 998.68	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 4←15, 4	Ground		146 999.07	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 3←15, 3	Ground		146 999.36	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 1←15, 1	Ground		146 999.65	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 2←15, 2	Ground		146 999.65	.30
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	16, 0←15, 0	Ground		146 999.65	.30
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 7← 7, 7	Ground		147 035.89	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 6← 7, 6	Ground		147 072.27	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 6← 7, 6	Ground		147 073.04	.25
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,24←24,24	Ground		147 089.91	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,23←24,23	Ground		147 103.56	.30
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 5← 7, 5	Ground		147 104.07	.25
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,22←24,22	Ground		147 116.55	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,21←24,21	Ground		147 129.08	.30
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 4← 7, 4	Ground		147 129.41	.25
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,20←24,20	Ground		147 140.97	.30
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 3← 7, 3	Ground		147 149.28	.25
F ¹⁹ DC ¹² O ¹⁶	4- 272	6, 2, 4← 6, 1, 5			147 150.05	.04
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,19←24,19	Ground		147 152.20	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,18←24,18	Ground		147 163.10	.30
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 2← 7, 2	Ground		147 163.46	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 1← 7, 1	Ground		147 171.95	.25
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,17←24,17	Ground		147 173.28	.30
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 0← 7, 0	Ground		147 174.72	.25
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,15←24,15	Ground		147 191.93	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,14←24,14	Ground		147 200.36	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,13←24,13	Ground		147 208.22	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,12←24,12	Ground		147 215.48	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,11←24,11	Ground		147 222.19	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25,10←24,10	Ground		147 228.26	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 9←24, 9	Ground		147 233.76	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 8←24, 8	Ground		147 238.71	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 6←24, 6	Ground		147 246.77	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 5←24, 5	Ground		147 249.92	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 4←24, 4	Ground		147 252.50	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 3←24, 3	Ground		147 254.55	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 2←24, 2	Ground		147 256.03	.30
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 1←24, 1	Ground		147 257.03	.30

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² F ₃ ¹⁹ C ¹² N ¹⁴	4- 591	25, 0←24, 0	Ground					147 257.28	.30
Br ⁸¹ C ¹² N ¹⁴	4- 142	18←17	Ground					147 464.71	.30
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 1← 7, 1	Excited					147 476.07	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 5← 7, 5	Excited					147 512.50	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 7← 7, 7	Excited					147 519.34	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 4← 7, 4	Excited					147 543.84	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 6← 7, 6	Excited					147 550.12	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 3← 7, 3	Excited					147 569.86	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 5← 7, 5	Excited					147 575.44	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 2← 7, 2	Excited					147 589.93	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 4← 7, 4	Excited					147 595.40	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 1← 7, 1	Excited					147 603.96	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 3← 7, 3	Excited					147 609.76	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 0← 7, 0	Excited					147 611.01	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 2← 7, 2	Excited					147 620.13	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 1← 7, 1	Excited					147 760.38	.25
Br ⁸¹ C ¹² N ¹⁴	4- 142	18←17	Excited					147 807.77	
Br ⁸¹ C ¹² N ¹⁴	4- 142	18←17	Excited					147 808.49	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					147 910.6	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					147 921.1	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					147 939.1	.25
Br ⁸¹ C ¹² N ¹⁴	4- 142	18←17	Excited					147 947.11	
Br ⁸¹ C ¹² N ¹⁴	4- 142	18←17	Excited					147 947.85	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 7← 7, 7	Excited					147 947.9	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					147 973.5	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 6← 7, 6	Excited					147 977.5	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 5← 7, 5	Excited					148 004.9	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					148 019.2	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 4← 7, 4	Excited					148 022.7	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					148 032.5	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					148 035.3	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 3← 7, 3	Excited					148 038.6	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 2← 7, 2	Excited					148 050.4	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					148 052.0	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 1← 7, 1	Excited					148 058.7	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, 0← 7, 0	Excited					148 060.0	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					148 064.0	.25
C ¹² H ₃ C ¹² N ¹⁴	4- 811	8, ← 7,	Excited					148 082.0	.25
Br ⁷⁹ C ¹² N ¹⁴	4- 141	18←17	Ground					148 307.36	.30
Br ⁷⁹ C ¹² N ¹⁴	4- 141	18←17	Excited					148 652.01	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	18←17	Excited					148 652.83	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	18←17	Excited					148 792.99	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	18←17	Excited					148 793.79	
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 0, 7← 6, 0, 6						149 439.56	.04
F ¹⁹ DC ¹² O ¹⁶	4- 272	5, 1, 5← 4, 0, 4						149 483.49	.04

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ ' F' F ₁ F				Frequency MHz	Acc. ±MHz
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 0, 7← 6, 0, 6	Ground					149 753.66	.2
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 1, 7← 6, 1, 6						150 098.73	.05
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	5/2		3/2		150 176.30	0.25
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	3/2		1/2		150 198.52	0.25
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	3/2		3/2		150 218.57	0.25
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	1/2		1/2		150 225.47	0.25
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	1/2		3/2		150 245.38	0.25
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 0, 7← 6, 0, 6	Ground					150 345.06	.2
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	1/2		3/2		150 375.02	0.25
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	3/2		3/2		150 438.72	0.25
HC ¹² HO ¹⁶	4- 381	2, 1, 1← 1, 1, 0	Ground					150 498.2	.75
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	5/2		3/2		150 546.25	0.25
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	1/2		1/2		150 580.38	0.25
N ¹⁴ O ¹⁶	1-	3/2← 1/2	Ground	3/2		1/2		150 644.11	0.25
N ₂ ¹⁴ O ¹⁶	4-1811	6← 5	Ground					150 735.13	.30
N ₂ ¹⁴ O ¹⁶	4-1811	6← 5	Excited					150 794.98	
F ¹⁹ DC ¹² O ¹⁶	4- 272	5, 2, 3← 5, 1, 4						150 856.20	.04
N ₂ ¹⁴ O ¹⁶	4-1811	6← 5	Excited					151 079.83	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 1, 7← 6, 1, 6						151 176.1	.1
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 1, 8← 7, 1, 7	Ground					151 370.98	.05
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 2, 6← 6, 2, 5						151 558.74	.04
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 2, 6← 6, 2, 5	Ground					151 778.74	.2
F ¹⁹ DC ¹² O ¹⁶	4- 272	12, 1, 11← 12, 0, 12						151 855.87	.04
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 6, ← 6, 6,						152 059.08	.04
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 5, ← 6, 5,						152 088.00	.04
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 4, 3← 6, 4, 2						152 147.81	.04
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 4, 4← 6, 4, 3						152 147.81	.04
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 3, 5← 6, 3, 4						152 253.06	.04
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 6, ← 6, 6,	Ground					152 264.95	.2
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 5, ← 6, 5,	Ground					152 288.87	.2
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 3, 4← 6, 3, 3						152 343.06	.04
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 4, 4← 6, 4, 3	Ground					152 343.36	.2
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 4, 3← 6, 4, 2	Ground					152 344.38	.2
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 3, 5← 6, 3, 4	Ground					152 442.80	.2
C ¹² H ₃ Br ⁸¹	4- 402	8, 4← 7, 4	Ground	13/2		11/2		152 443.13	
C ¹² H ₃ Br ⁸¹	4- 402	8, 6← 7, 6	Ground	17/2		15/2		152 446.88	
C ¹² H ₃ Br ⁸¹	4- 402	8, 4← 7, 4	Ground	19/2		17/2		152 446.88	
C ¹² H ₃ Br ⁸¹	4- 402	8, 5← 7, 5	Ground	15/2		13/2		152 452.02	
C ¹² H ₃ Br ⁸¹	4- 402	8, 5← 7, 5	Ground	17/2		15/2		152 459.44	
C ¹² H ₃ Br ⁸¹	4- 402	8, 3← 7, 3	Ground	19/2		17/2		152 464.97	
C ¹² H ₃ Br ⁸¹	4- 402	8, 4← 7, 4	Ground	15/2		13/2		152 466.19	
C ¹² H ₃ Br ⁸¹	4- 402	8, 1← 7, 1	Ground	15/2		15/2		152 466.19	
C ¹² H ₃ Br ⁸¹	4- 402	8, 4← 7, 4	Ground	17/2		15/2		152 469.84	
C ¹² H ₃ Br ⁸¹	4- 402	8, 3← 7, 3	Ground	15/2		13/2		152 477.06	
C ¹² H ₃ Br ⁸¹	4- 402	8, 3← 7, 3	Ground	17/2		15/2		152 477.87	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
C ¹² H ₃ Br ⁸¹	4- 402	8, 2← 7, 2	Ground	19/2	17/2	152	477.87		
C ¹² H ₃ Br ⁸¹	4- 402	8, 2← 7, 2	Ground	13/2	11/2	152	479.20		
C ¹² H ₃ Br ⁸¹	4- 402	8, 2← 7, 2	Ground	17/2	15/2	152	483.60		
C ¹² H ₃ Br ⁸¹	4- 402	8, 2← 7, 2	Ground	15/2	13/2	152	484.89		
C ¹² H ₃ Br ⁸¹	4- 402	8, 1← 7, 1	Ground	19/2	17/2	152	485.61		
C ¹² H ₃ Br ⁸¹	4- 402	8, 1← 7, 1	Ground	17/2	15/2	152	487.03		
C ¹² H ₃ Br ⁸¹	4- 402	8, 4← 7, 4	Ground	17/2	17/2	152	487.03		
C ¹² H ₃ Br ⁸¹	4- 402	8, 1← 7, 1	Ground	13/2	11/2	152	488.14		
C ¹² H ₃ Br ⁸¹	4- 402	8, 0← 7, 0	Ground	17/2	15/2	152	488.14		
C ¹² H ₃ Br ⁸¹	4- 402	8, 0← 7, 0	Ground	19/2	17/2	152	488.14		
C ¹² H ₃ Br ⁸¹	4- 402	8, 1← 7, 1	Ground	15/2	13/2	152	489.56		
C ¹² H ₃ Br ⁸¹	4- 402	8, 0← 7, 0	Ground	13/2	11/2	152	491.10		
C ¹² H ₃ Br ⁸¹	4- 402	8, 0← 7, 0	Ground	15/2	13/2	152	491.10		
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 3, 4← 6, 3, 3	Ground					152 526.01	.2
D ₂ Se ^b	4-1754	Not Reported	Ground					152 808.24	
D ₂ Se ^b	4-1754	Not Reported	Ground					152 955.12	
C ¹² H ₃ Br ⁷⁹	4- 401	8, 5← 7, 5	Ground	13/2	11/2	152	992.98		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 5← 7, 5	Ground	19/2	17/2	153	001.93		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 6← 7, 6	Ground	15/2	13/2	153	019.63		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 4← 7, 4	Ground	13/2	11/2	153	021.82		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 4← 7, 4	Ground	19/2	17/2	153	026.32		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 6← 7, 6	Ground	17/2	15/2	153	034.03		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 5← 7, 5	Ground	15/2	13/2	153	035.98		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 3← 7, 3	Ground	13/2	11/2	153	044.21		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 3← 7, 3	Ground	19/2	17/2	153	045.22		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 4← 7, 4	Ground	15/2	13/2	153	049.30		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 4← 7, 4	Ground	17/2	15/2	153	053.70		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 2← 7, 2	Ground	19/2	17/2	153	058.75		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 3← 7, 3	Ground	15/2	13/2	153	059.73		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 3← 7, 3	Ground	17/2	15/2	153	060.67		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 2← 7, 2	Ground	17/2	15/2	153	065.61		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 1← 7, 1	Ground	19/2	17/2	153	066.92		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 1← 7, 1	Ground	17/2	15/2	153	068.60		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 0← 7, 0	Ground	19/2	17/2	153	069.61		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 0← 7, 0	Ground	17/2	15/2	153	069.61		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 1← 7, 1	Ground	15/2	13/2	153	071.60		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 0← 7, 0	Ground	13/2	11/2	153	073.09		
C ¹² H ₃ Br ⁷⁹	4- 401	8, 0← 7, 0	Ground	15/2	13/2	153	073.09		
D ₂ Se ^b	4-1754	Not Reported	Ground					153 126.12	
C ¹² H ₃ F ¹⁹	4- 461	3, 2← 2, 2	Ground					153 199.58	.30
C ¹² H ₃ F ¹⁹	4- 461	3, 1← 2, 1	Ground					153 207.65	.30
C ¹² H ₃ F ¹⁹	4- 461	3, 0← 2, 0	Ground					153 210.44	.30
D ₂ Se ^b	4-1754	Not Reported	Ground					153 214.14	
D ₂ Se ^b	4-1754	Not Reported	Ground					153 312.56	
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 2, 6← 6, 2, 5	Ground					153 521.68	.2

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² :C ¹² H	4-1041	9, 6← 8, 6						153 711.55	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	9, 5← 8, 5						153 743.72	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	9, 4← 8, 4						153 770.15	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	9, 3← 8, 3						153 790.66	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	9, 2← 8, 2						153 805.37	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	9, 1← 8, 1						153 814.27	.30
C ¹² H ₃ C ¹² :C ¹² H	4-1041	9, 0← 8, 0						153 817.16	.30
D ₂ Se ^b	4-1754	Not Reported	Ground					153 842.64	
D ₂ Se ^b	4-1754	Not Reported	Ground					153 877.80	
D ₂ Se ^b	4-1754	Not Reported	Ground					153 920.46	
D ₂ Se ^b	4-1754	Not Reported	Ground					154 001.70	
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 2, 5← 6, 2, 4						154 029.84	.04
D ₂ Se ^b	4-1754	Not Reported	Ground					154 080.18	
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 0, 7← 6, 0, 6						154 120.02	.05
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 2, 5← 6, 2, 4	Ground					154 137.58	.2
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 6, ← 6, 6,	Ground					154 285.66	.2
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 5, ← 6, 5,	Ground					154 332.94	.2
F ¹⁹ DC ¹² O ¹⁶	4- 272	4, 2, 2← 4, 1, 3						154 391.16	.04
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 4, 4← 6, 4, 3	Ground					154 427.84	.2
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 4, 2← 6, 4, 2	Ground					154 431.13	.2
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 3, 5← 6, 3, 4	Ground					154 571.17	.2
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 3, 4← 6, 3, 3	Ground					154 757.18	.2
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 2, 6← 6, 2, 5						154 955.55	.04
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 5, ← 6, 5,						155 183.56	.04
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 6, ← 6, 6,						155 186.37	.04
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 4, ← 6, 4,						155 195.15	.04
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 3, 5← 6, 3, 4						155 234.17	.04
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 3, 4← 6, 3, 3						155 251.93	.04
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 0, 8← 7, 0, 7	Ground					155 476.98	.05
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 0, 7← 6, 0, 6						155 617.9	.1
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 2, 5← 6, 2, 4						155 923.97	.04
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 2, 6← 6, 2, 5						157 054.0	.1
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 2, 5← 6, 2, 4	Ground					157 241.48	.2
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 6, ← 6, 6,						157 412.9	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 5, ← 6, 5,						157 422.7	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 4, 3← 6, 4, 2						157 455.2	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 4, 4← 6, 4, 3						157 455.2	.1
F ¹⁹ DC ¹² O ¹⁶	4- 272	3, 2, 1← 3, 1, 2						157 515.96	.04
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 3, 5← 6, 3, 4						157 526.1	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 3, 4← 6, 3, 3						157 570.6	.1
F ¹⁹ DC ¹² O ¹⁶	4- 272	7, 1, 6← 6, 1, 5						157 633.14	.04
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 2, 7← 7, 2, 6	Ground					157 641.90	.05
HC ¹² O ¹⁶ O ¹⁶ D	3- 72	7, 1, 6← 6, 1, 5	Ground					157 770.81	.2
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	6, 1, 6← 5, 0, 5	Ground					157 931.82	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 7, ← 7, 7,	Ground					158 179.25	.05

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 6, ← 7, 6,	Ground					158 184.68	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 5, ← 7, 5,	Ground					158 206.80	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 4, 5← 7, 4, 4	Ground					158 262.74	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 4, 4← 7, 4, 3	Ground					158 264.18	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 3, 6← 7, 3, 5	Ground					158 362.00	.05
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 3, 5← 7, 3, 4	Ground					158 464.81	.05
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 2, 5← 6, 2, 4						158 721.0	.1
C ¹² H ₃ Cl ³⁵	4- 421	6, 4← 5, 4	Ground	13/2	11/2			159 455.37	
C ¹² H ₃ Cl ³⁵	4- 421	6, 4← 5, 4	Ground	15/2	13/2			159 463.92	
C ¹² H ₃ Cl ³⁵	4- 421	6, 4← 5, 4	Ground	9/2	7/2			159 466.53	
C ¹² H ₃ Cl ³⁵	4- 421	6, 3← 5, 3	Ground	13/2	11/2			159 474.48	
C ¹² H ₃ Cl ³⁵	4- 421	6, 3← 5, 3	Ground	11/2	9/2			159 475.47	
C ¹² H ₃ Cl ³⁵	4- 421	6, 3← 5, 3	Ground	15/2	13/2			159 479.25	
C ¹² H ₃ Cl ³⁵	4- 421	6, 0← 5, 0	Ground	13/2	13/2			159 480.29	
C ¹² H ₃ Cl ³⁵	4- 421	6, 3← 5, 3	Ground	9/2	7/2			159 480.29	
C ¹² H ₃ Cl ³⁵	4- 421	6, 2← 5, 2	Ground	13/2	11/2			159 488.13	
C ¹² H ₃ Cl ³⁵	4- 421	6, 2← 5, 2	Ground	11/2	9/2			159 488.13	
C ¹² H ₃ Cl ³⁵	4- 421	6, 2← 5, 2	Ground	9/2	7/2			159 490.27	
C ¹² H ₃ Cl ³⁵	4- 421	6, 2← 5, 2	Ground	15/2	13/2			159 490.27	
C ¹² H ₃ Cl ³⁵	4- 421	6, 1← 5, 1	Ground					159 495.99	
C ¹² H ₃ Cl ³⁵	4- 421	6, 0← 5, 0	Ground	9/2	7/2			159 498.25	
C ¹² H ₃ Cl ³⁵	4- 421	6, 0← 5, 0	Ground	11/2	9/2			159 498.25	
C ¹² H ₃ Cl ³⁵	4- 421	6, 0← 5, 0	Ground	13/2	11/2			159 499.02	
C ¹² H ₃ Cl ³⁵	4- 421	6, 0← 5, 0	Ground	15/2	13/2			159 499.02	
F ¹⁹ HC ¹² O ¹⁶	4- 271	7, 1, 6← 6, 1, 5						159 618.91	.04
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 2, 6← 7, 2, 5	Ground					160 185.15	.05
DC ¹² O ¹⁶ O ¹⁶ H	3- 73	7, 1, 6← 6, 1, 5	Ground					160 392.07	.2
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 1, 7← 6, 1, 6	Ground					160 482.02	.15
HN ₂ ¹⁵ N ₂ ¹⁴	4-1704	7, 1, 7← 6, 1, 6	Ground					160 810.95	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 4, 4← 6, 4, 3	Ground					161 152.23	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 4, 3← 6, 4, 2	Ground					161 152.23	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 3, 5← 6, 3, 4	Ground					161 227.43	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 3, 4← 6, 3, 3	Ground					161 227.43	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 2, 6← 6, 2, 5	Ground					161 279.15	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 2, 5← 6, 2, 4	Ground					161 282.99	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 0, 7← 6, 0, 6	Ground					161 317.87	.15
HN ₂ ¹⁵ N ₂ ¹⁴	4-1704	7, 3, 4← 6, 3, 3	Ground					161 565.21	.15
HN ₂ ¹⁵ N ₂ ¹⁴	4-1704	7, 3, 5← 6, 3, 4	Ground					161 565.21	.15
HN ₂ ¹⁵ N ₂ ¹⁴	4-1704	7, 2, 6← 6, 2, 5	Ground					161 617.96	.15
HN ₂ ¹⁵ N ₂ ¹⁴	4-1704	7, 2, 5← 6, 2, 4	Ground					161 621.98	.15
HN ₂ ¹⁵ N ₂ ¹⁴	4-1704	7, 0, 7← 6, 0, 6	Ground					161 657.34	.15
F ¹⁹ HC ¹² O ¹⁶	4- 271	4, 1, 4← 3, 0, 3						161 927.56	.05
HN ₂ ¹⁴ N ¹⁵	4-1703	7, 1, 6← 6, 1, 5	Ground					162 138.74	.15
HN ₂ ¹⁵ N ₂ ¹⁴	4-1704	7, 1, 6← 6, 1, 5	Ground					162 488.56	.15
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	7, 1, 6← 6, 1, 5						162 598.4	.1

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
H ₂ C ¹² :C ¹² HF ¹⁹	4- 781	8, 1, 7 $\leftarrow$ 7, 1, 6	Ground					163 410.32	.05
Cl ³⁷ C ¹² N ¹⁴	4- 173	14 $\leftarrow$ 13	Ground					163 705.31	.35
Cl ³⁷ C ¹² N ¹⁴	4- 173	14 $\leftarrow$ 13	Excited					164 052.55	
Cl ³⁷ C ¹² N ¹⁴	4- 173	14 $\leftarrow$ 13	Excited					164 253.26	
H ₂ Se ⁸²	4-1745	3, 3, 0 $\leftarrow$ 3, 2, 1	Ground					164 663.10	
H ₂ Se ⁸⁰	4-1744	3, 3, 0 $\leftarrow$ 3, 2, 1	Ground					165 240.46	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 8 $\leftarrow$ 8, 8	Ground					165 365.43	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 7 $\leftarrow$ 8, 7	Ground					165 412.93	.5
F ¹⁹ DC ¹² O ¹⁶	4- 272	2, 2, 1 $\leftarrow$ 2, 1, 2						165 448.32	.04
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 6 $\leftarrow$ 8, 6	Ground					165 454.09	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 6 $\leftarrow$ 8, 6	Ground					165 454.34	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 5 $\leftarrow$ 8, 5	Ground					165 489.39	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 4 $\leftarrow$ 8, 4	Ground					165 517.93	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 3 $\leftarrow$ 8, 3	Ground					165 540.31	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 2 $\leftarrow$ 8, 2	Ground					165 556.18	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 1 $\leftarrow$ 8, 1	Ground					165 565.71	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 0 $\leftarrow$ 8, 0	Ground					165 568.95	.5
HN ₃ ¹⁴	4-1701	7, 1, 7 $\leftarrow$ 6, 1, 6	Ground					165 806.33	.25
H ₂ Se ⁷⁸	4-1743	3, 3, 0 $\leftarrow$ 3, 2, 1	Ground					165 847.57	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 1 $\leftarrow$ 8, 1	Excited					165 908.28	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 5 $\leftarrow$ 8, 5	Excited					165 948.85	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 7 $\leftarrow$ 8, 7	Excited					165 957.03	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 4 $\leftarrow$ 8, 4	Excited					165 983.98	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 6 $\leftarrow$ 8, 6	Excited					165 992.06	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 3 $\leftarrow$ 8, 3	Excited					166 013.38	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 5 $\leftarrow$ 8, 5	Excited					166 020.50	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 2 $\leftarrow$ 8, 2	Excited					166 036.03	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 4 $\leftarrow$ 8, 4	Excited					166 042.93	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 1 $\leftarrow$ 8, 1	Excited					166 051.73	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 0 $\leftarrow$ 8, 0	Excited					166 059.13	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 3 $\leftarrow$ 8, 3	Excited					166 059.13	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 2 $\leftarrow$ 8, 2	Excited					166 071.30	.5
H ₂ Se ⁷⁷	4-1742	3, 3, 0 $\leftarrow$ 3, 2, 1	Ground					166 163.20	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	9, 1 $\leftarrow$ 8, 1	Excited					166 228.53	.5
HN ₃ ¹⁴	4-1701	7, 5, 3 $\leftarrow$ 6, 5, 2	Ground					166 416.76	.25
HN ₃ ¹⁴	4-1701	7, 5, 2 $\leftarrow$ 6, 5, 1	Ground					166 416.76	.25
H ₂ Se ⁷⁶	4-1741	3, 3, 0 $\leftarrow$ 3, 2, 1	Ground					166 488.14	
HN ₃ ¹⁴	4-1701	7, 4, 3 $\leftarrow$ 6, 4, 2	Ground					166 522.79	.25
HN ₃ ¹⁴	4-1701	7, 4, 4 $\leftarrow$ 6, 4, 3	Ground					166 522.79	.25
HN ₃ ¹⁴	4-1701	7, 3, 5 $\leftarrow$ 6, 3, 4	Ground					166 602.85	.25
HN ₃ ¹⁴	4-1701	7, 3, 4 $\leftarrow$ 6, 3, 3	Ground					166 602.85	.25
HN ₃ ¹⁴	4-1701	7, 2, 6 $\leftarrow$ 6, 2, 5	Ground					166 657.66	.25
HN ₃ ¹⁴	4-1701	7, 2, 5 $\leftarrow$ 6, 2, 4	Ground					166 662.05	.25
HN ₃ ¹⁴	4-1701	7, 0, 7 $\leftarrow$ 6, 0, 6	Ground					166 698.40	.25
Cl ³⁵ C ¹² N ¹⁴	4- 171	14 $\leftarrow$ 13	Ground					167 165.15	.35

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F ₁ F' F ₁ F				Frequency MHz	Acc. ±MHz
Cl ³⁵ C ¹² N ¹⁴	4- 171	14←13	Excited					167 517.88	
HN ¹⁴	4-1701	7, 1, 6← 6, 1, 5	Ground					167 575.07	.25
O ¹⁶ C ¹² Se ⁸²	4- 548	21←20	Ground					167 726.08	.35
Cl ³⁵ C ¹² N ¹⁴	4- 171	14←13	Excited					167 726.78	
H ₂ S ³⁴	4-1726	1, 1, 0← 1, 0, 1	Ground					167 910.57	.35
F ¹⁹ DC ¹² O ¹⁶	4- 272	3, 2, 2← 3, 1, 3						168 210.00	.04
H ₂ S ³³	4-1725	1, 1, 0← 1, 0, 1	Ground					168 322.63	.35
O ¹⁶ C ¹² Se ⁸⁰	4- 547	21←20	Ground					168 716.41	.35
H ₂ S ³²	4-1724	1, 1, 0← 1, 0, 1	Ground					168 762.51	.35
O ¹⁶ C ¹² Se ⁸⁰	4- 547	21←20	Excited					168 939.60	
O ¹⁶ C ¹² Se ⁸⁰	4- 547	21←20	Excited					169 072.81	
O ¹⁶ C ¹² Se ⁷⁸	4- 545	21←20	Ground					169 756.27	.35
D ₂ Se ⁷⁶	4-1746	2, 1, 1← 2, 0, 2	Ground					170 071.51	
D ₂ Se ⁷⁷	4-1747	2, 1, 1← 2, 0, 2	Ground					170 107.35	
D ₂ Se ⁷⁸	4-1748	2, 1, 1← 2, 0, 2	Ground					170 142.70	
D ₂ Se ⁸⁰	4-1749	2, 1, 1← 2, 0, 2	Ground					170 211.30	
O ¹⁶ C ¹² S ³²	4- 521	14←13	Ground					170 267.49	.35
D ₂ Se ⁸²	4-1751	2, 1, 1← 2, 0, 2	Ground					170 277.03	
O ¹⁶ C ¹² Se ⁷⁷	4- 544	21←20	Ground					170 294.80	.35
C ¹² H ₃ C ¹² :C ¹² H	4-1041	10, 7← 9, 7						170 746.05	.35
C ¹² H ₃ C ¹² :C ¹² H	4-1041	10, 6← 9, 6						170 788.29	.35
C ¹² H ₃ C ¹² :C ¹² H	4-1041	10, 5← 9, 5						170 824.13	.35
O ¹⁶ C ¹² Se ⁷⁶	4- 543	21←20	Ground					170 849.06	.35
C ¹² H ₃ C ¹² :C ¹² H	4-1041	10, 4← 9, 4						170 853.50	.35
C ¹² H ₃ C ¹² :C ¹² H	4-1041	10, 3← 9, 3						170 876.27	.35
C ¹² H ₃ C ¹² :C ¹² H	4-1041	10, 2← 9, 2						170 892.59	.35
C ¹² H ₃ C ¹² :C ¹² H	4-1041	10, 1← 9, 1						170 902.37	.35
C ¹² H ₃ C ¹² :C ¹² H	4-1041	10, 0← 9, 0						170 905.66	.35
Br ⁸¹ C ¹² N ¹⁴	4- 142	21←20	Ground					172 033.53	.35
TBr ⁸¹	1-	1← 0	Ground	5/2		3/2		172 320.96	.40
TBr ⁸¹	1-	1← 0	Ground	3/2		3/2		172 431.49	.40
Br ⁸¹ C ¹² N ¹⁴	4- 142	21←20	Excited					172 434.07	
TBr ⁷⁹	1-	1← 0	Ground	5/2		3/2		172 472.72	.40
Br ⁸¹ C ¹² N ¹⁴	4- 142	21←20	Excited					172 596.70	
TBr ⁷⁹	1-	1← 0	Ground	3/2		3/2		172 604.60	.40
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 1, 8← 7, 1, 7						172 636.7	.1
Br ⁷⁹ C ¹² N ¹⁴	4- 141	21←20	Ground					173 016.45	.35
Br ⁷⁹ C ¹² N ¹⁴	4- 141	21←20	Excited					173 418.77	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	21←20	Excited					173 583.26	
N ₂ ¹⁴ O ¹⁶	4-1811	7← 6	Ground					175 855.72	.35
Sb ¹²³ H ₃	4-1792	1, ← 0,	Ground	5/2		7/2		175 973.49	.5
Sb ¹²¹ H ₃	4-1791	1, ← 0,	Ground	3/2		5/2		176 004.64	.5
Sb ¹²³ H ₃	4-1792	1, ← 0,	Ground	9/2		7/2		176 008.39	.5
Sb ¹²¹ H ₃	4-1791	1, ← 0,	Ground	7/2		5/2		176 047.74	.5
Sb ¹²³ H ₃	4-1792	1, ← 0,	Ground	7/2		7/2		176 120.60	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
Sb ¹²¹ H ₃	4-1791	1, $\leftarrow$ 0,	Ground	5/2		5/2		176 142.92	.5
HN ₃ ¹⁴	4-1701	8, 1, 8 $\leftarrow$ 7, 1, 7	Ground					176 964.18	.25
HC ¹² N ¹⁴	4- 291	2 $\leftarrow$ 1	Ground					177 260.99	.40
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 0, 8 $\leftarrow$ 7, 0, 7						177 283.0	.1
HN ₃ ¹⁴	4-1701	8, 5, 3 $\leftarrow$ 7, 5, 2	Ground					178 337.49	.25
HN ₃ ¹⁴	4-1701	8, 5, 4 $\leftarrow$ 7, 5, 3	Ground					178 337.49	.25
HN ₃ ¹⁴	4-1701	8, 4, 4 $\leftarrow$ 7, 4, 3	Ground					178 404.21	.25
HN ₃ ¹⁴	4-1701	8, 4, 5 $\leftarrow$ 7, 4, 4	Ground					178 404.21	.25
HN ₃ ¹⁴	4-1701	8, 3, 6 $\leftarrow$ 7, 3, 5	Ground					178 456.64	.25
HN ₃ ¹⁴	4-1701	8, 3, 5 $\leftarrow$ 7, 3, 4	Ground					178 456.64	.25
HN ₃ ¹⁴	4-1701	8, 2, 7 $\leftarrow$ 7, 2, 6	Ground					178 484.73	.25
HN ₃ ¹⁴	4-1701	8, 0, 8 $\leftarrow$ 7, 0, 7	Ground					178 489.31	.25
HN ₃ ¹⁴	4-1701	8, 2, 6 $\leftarrow$ 7, 2, 5	Ground					178 512.13	.25
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 2, 7 $\leftarrow$ 7, 2, 6						179 384.6	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 5, $\leftarrow$ 7, 5,						179 932.2	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 4, 5 $\leftarrow$ 7, 4, 4						179 984.1	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 4, 4 $\leftarrow$ 7, 4, 3						179 985.3	.1
HN ₃ ¹⁴	4-1701	8, 1, 7 $\leftarrow$ 7, 1, 6	Ground					180 042.27	.25
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 3, 6 $\leftarrow$ 7, 3, 5						180 083.0	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 3, 5 $\leftarrow$ 7, 3, 4						180 171.4	.1
D ₂ Se ^b	4-1754	Not Reported	Ground					181 658.80	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 2, 6 $\leftarrow$ 7, 2, 5						181 850.2	.1
D ₂ Se ^b	4-1754	Not Reported	Ground					182 226.76	
D ₂ Se ^b	4-1754	Not Reported	Ground					182 279.28	
H ₂ O ¹⁶	4-1711	3, 1, 3 $\leftarrow$ 2, 2, 0	Ground					183 311.30	.30
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 1, 8 $\leftarrow$ 7, 1, 7	Ground					183 405.55	.15
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 8 $\leftarrow$ 9, 8	Ground					183 736.28	.5
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 1, 8 $\leftarrow$ 7, 1, 7	Ground					183 781.39	.15
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 7 $\leftarrow$ 9, 7	Ground					183 789.31	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 6 $\leftarrow$ 9, 6	Ground					183 835.34	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 5 $\leftarrow$ 9, 5	Ground					183 874.21	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 4 $\leftarrow$ 9, 4	Ground					183 906.05	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 3 $\leftarrow$ 9, 3	Ground					183 930.79	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 2 $\leftarrow$ 9, 2	Ground					183 948.49	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 1 $\leftarrow$ 9, 1	Ground					183 959.08	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 0 $\leftarrow$ 9, 0	Ground					183 962.62	.5
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 4, 5 $\leftarrow$ 7, 4, 4	Ground					184 171.91	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 4, 4 $\leftarrow$ 7, 4, 3	Ground					184 171.91	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 3, 6 $\leftarrow$ 7, 3, 5	Ground					184 257.81	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 3, 6 $\leftarrow$ 7, 3, 5	Ground					184 257.81	.15
D ₂ Se ^b	4-1754	Not Reported	Ground					184 266.88	
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 2, 7 $\leftarrow$ 7, 2, 6	Ground					184 316.65	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 2, 6 $\leftarrow$ 7, 2, 5	Ground					184 322.43	.15
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 1 $\leftarrow$ 9, 1	Excited					184 339.70	.5
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 0, 8 $\leftarrow$ 7, 0, 7	Ground					184 359.48	.15

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 5← 9, 5	Excited					184 384.64	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 7← 9, 7	Excited					184 394.55	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 4← 9, 4	Excited					184 424.19	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 6← 9, 6	Excited					184 433.11	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 3← 9, 3	Excited					184 456.00	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 5← 9, 5	Excited					184 464.84	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 2← 9, 2	Excited					184 481.06	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 4← 9, 4	Excited					184 489.56	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 1← 9, 1	Excited					184 498.20	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 0← 9, 0	Excited					184 505.64	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 3← 9, 3	Excited					184 508.45	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 2← 9, 2	Excited					184 522.32	.5
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 4, 4← 7, 4, 3	Ground					184 556.52	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 4, 5← 7, 4, 4	Ground					184 556.52	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 3, 6← 7, 3, 5	Ground					184 643.88	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 3, 5← 7, 3, 4	Ground					184 643.88	.15
D ₂ Se ^b	4-1754	Not Reported	Ground					184 655.68	
C ¹² H ₃ C ¹² N ¹⁴	4- 811	10, 1← 9, 1	Excited					184 695.21	.5
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 2, 7← 7, 2, 6	Ground					184 703.68	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 2, 6← 7, 2, 5	Ground					184 709.52	.15
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 0, 8← 7, 0, 7	Ground					184 747.53	.15
D ₂ Se ⁸²	4-1751	1, 1, 1← 0, 0, 0	Ground					184 981.28	
D ₂ Se ^b	4-1754	Not Reported						185 062.80	
D ₂ Se ⁸⁰	4-1749	1, 1, 1← 0, 0, 0	Ground					185 161.28	
HN ₂ ¹⁴ N ¹⁵	4-1703	8, 1, 7← 7, 1, 6	Ground					185 298.79	.15
D ₂ Se ⁷⁸	4-1748	1, 1, 1← 0, 0, 0	Ground					185 350.80	
D ₂ Se ⁷⁷	4-1747	1, 1, 1← 0, 0, 0	Ground					185 448.96	
D ₂ Se ⁷⁶	4-1746	1, 1, 1← 0, 0, 0	Ground					185 549.92	
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	8, 1, 7← 7, 1, 6						185 650.3	.1
HN ¹⁵ N ₂ ¹⁴	4-1704	8, 1, 7← 7, 1, 6	Ground					185 698.56	.15
C ¹² HF ₃ ¹⁹	4- 281	9, 0← 8, 0	Ground					186 246.50	.40
C ¹² HF ₃ ¹⁹	4- 281	9, 1← 8, 1	Ground					186 246.87	.40
C ¹² HF ₃ ¹⁹	4- 281	9, 2← 8, 2	Ground					186 247.81	.40
C ¹² HF ₃ ¹⁹	4- 281	9, 3← 8, 3	Ground					186 249.42	.40
C ¹² HF ₃ ¹⁹	4- 281	9, 4← 8, 4	Ground					186 251.70	.40
C ¹² HF ₃ ¹⁹	4- 281	9, 5← 8, 5	Ground					186 254.65	.40
C ¹² HF ₃ ¹⁹	4- 281	9, 6← 8, 6	Ground					186 258.21	.40
C ¹² HF ₃ ¹⁹	4- 281	9, 7← 8, 7	Ground					186 262.43	.40
C ¹² HF ₃ ¹⁹	4- 281	9, 8← 8, 8	Ground					186 267.30	.40
Cl ³⁷ C ¹² N ¹⁴	4- 173	16←15	Ground					187 085.58	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 0←12, 0	Ground					187 342.87	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 1←12, 1	Ground					187 343.20	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 2←12, 2	Ground					187 344.13	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 3←12, 3	Ground					187 345.74	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 4←12, 4	Ground					187 348.03	.40

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 5←12, 5	Ground					187 350.98	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 6←12, 6	Ground					187 354.52	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 7←12, 7	Ground					187 358.70	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 8←12, 8	Ground					187 363.55	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13, 9←12, 9	Ground					187 369.10	.40
HN ¹⁴ C ¹² S ³²	4- 311	16, 1,16←15, 1,15	Ground					187 370.57	.5
Si ²⁸ F ₃ ¹⁹ H	4-1641	13,10←12,10	Ground					187 375.26	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13,11←12,11	Ground					187 382.00	.40
Si ²⁸ F ₃ ¹⁹ H	4-1641	13,12←12,12	Ground					187 389.49	.40
Cl ³⁷ C ¹² N ¹⁴	4- 173	16←15	Excited					187 482.50	
HN ¹⁴ C ¹² S ³²	4- 311	16, 0,16←15, 0,15	Ground					187 645.15	.5
Cl ³⁷ C ¹² N ¹⁴	4- 173	16←15	Excited					187 711.52	
HN ¹⁴ C ¹² S ³²	4- 311	16, 2,15←15, 2,14	Ground					187 711.730	.5
HN ¹⁴ C ¹² S ³²	4- 311	16, 2,14←15, 2,13	Ground					187 712.225	.5
HN ¹⁴ C ¹² S ³²	4- 311	16, 3,14←15, 3,13	Ground					187 736.68	1.0
HN ¹⁴ C ¹² S ³²	4- 311	16, 3,13←15, 3,12	Ground					187 736.68	1.0
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 8←10, 8						187 763.96	.40
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 7←10, 7						187 817.95	.40
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 6←10, 6						187 864.42	.40
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 5←10, 5						187 903.96	.40
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 4←10, 4						187 936.34	.40
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 3←10, 3						187 961.41	.40
HN ¹⁴ C ¹² S ³²	4- 311	16, 1,15←15, 1,14	Ground					187 976.13	.5
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 2←10, 2						187 979.34	.40
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 1←10, 1						187 990.02	.40
C ¹² H ₃ C ¹² :C ¹² H	4-1041	11, 0←10, 0						187 993.69	.40
HN ¹⁴ C ¹² S ³²	4- 311	16, 0, ←15, 0,	Excited					188 001.0	1.0
HN ¹⁴ C ¹² S ³²	4- 311	16, 2, ←15, 2,	Excited					188 010.9	1.0
HN ¹⁴ C ¹² S ³²	4- 311	16, 0, ←15, 0,	Excited					188 015.4	1.0
HN ¹⁴ C ¹² S ³²	4- 311	16, , ←15, ,	Excited					188 131.7	1.0
HN ¹⁴ C ¹² S ³²	4- 311	16, , ←15, ,	Excited					188 181.5	1.0
Cl ³⁵ C ¹² N ¹⁴	4- 171	16←15	Ground					191 039.44	.40
Cl ³⁵ C ¹² N ¹⁴	4- 171	16←15	Excited					191 442.66	
O ¹⁶ C ¹² Se ⁸²	4- 548	24←23	Ground					191 678.34	.40
Cl ³⁵ C ¹² N ¹⁴	4- 171	16←15	Excited					191 681.13	
O ¹⁶ C ¹² Se ⁸⁰	4- 547	24←23	Ground					192 810.17	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,20←20,20	Ground					192 899.61	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,19←20,19	Ground					192 901.76	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,18←20,18	Ground					192 903.75	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,17←20,17	Ground					192 905.66	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,16←20,16	Ground					192 907.43	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,15←20,15	Ground					192 909.10	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,14←20,14	Ground					192 910.67	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,13←20,13	Ground					192 912.14	.40
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	21,12←20,12	Ground					192 913.48	.40

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F'_1	F'	F_1	F		
$P^{31}O^{16}F_3^{19}$	4-1671	21,11 $\leftarrow$ 20,11	Ground					192 914.71	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21,10 $\leftarrow$ 20,10	Ground					192 915.83	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 9 $\leftarrow$ 20, 9	Ground					192 916.89	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 8 $\leftarrow$ 20, 8	Ground					192 917.78	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 7 $\leftarrow$ 20, 7	Ground					192 918.60	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 6 $\leftarrow$ 20, 6	Ground					192 919.30	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 5 $\leftarrow$ 20, 5	Ground					192 919.93	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 4 $\leftarrow$ 20, 4	Ground					192 920.35	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 3 $\leftarrow$ 20, 3	Ground					192 920.72	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 1 $\leftarrow$ 20, 1	Ground					192 921.13	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 2 $\leftarrow$ 20, 2	Ground					192 921.13	.40
$P^{31}O^{16}F_3^{19}$	4-1671	21, 0 $\leftarrow$ 20, 0	Ground					192 921.13	.40
$O^{16}C^{12}Se^{80}$	4- 547	24 $\leftarrow$ 23	Excited					193 065.08	
$O^{16}C^{12}Se^{80}$	4- 547	24 $\leftarrow$ 23	Excited					193 217.26	
$O^{16}C^{12}Se^{78}$	4- 545	24 $\leftarrow$ 23	Ground					193 998.34	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33,12 $\leftarrow$ 32,12	Ground					194 305.6 ^R	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33,11 $\leftarrow$ 32,11	Ground					194 314.42	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33,10 $\leftarrow$ 32,10	Ground					194 322.46	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 9 $\leftarrow$ 32, 9	Ground					19 $\pm$ 329.69	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 8 $\leftarrow$ 32, 8	Ground					194 336.36	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 7 $\leftarrow$ 32, 7	Ground					194 342.10	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 6 $\leftarrow$ 32, 6	Ground					194 346.88	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 5 $\leftarrow$ 32, 5	Ground					194 351.15	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 4 $\leftarrow$ 32, 4	Ground					194 354.51	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 3 $\leftarrow$ 32, 3	Ground					194 357.22	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 2 $\leftarrow$ 32, 2	Ground					194 359.19	.40
$C^{12}F_3^{19}C^{12}N^{14}$	4- 591	33, 0 $\leftarrow$ 32, 0	Ground					194 360.70	.40
$O^{16}C^{12}S^{32}$	4- 521	16 $\leftarrow$ 15	Ground					194 586.44	.40
$O^{16}C^{12}Se^{77}$	4- 544	24 $\leftarrow$ 23	Ground					194 613.75	.40
DI^{127}	1-	1 $\leftarrow$ 0	Ground		5/2		5/2	194 776.10	.04
DI^{127}	1-	1 $\leftarrow$ 0	Ground		7/2		5/2	195 159.554	.04
$O^{16}C^{12}Se^{76}$	4- 543	24 $\leftarrow$ 23	Ground					195 247.17	.40
DI^{127}	1-	1 $\leftarrow$ 0	Ground		3/2		5/2	195 322.706	.04
$Br^{81}C^{12}N^{14}$	4- 142	24 $\leftarrow$ 23	Ground					196 598.50	.40
$Br^{81}C^{12}N^{14}$	4- 142	24 $\leftarrow$ 23	Excited					197 055.84	
$Br^{81}C^{12}N^{14}$	4- 142	24 $\leftarrow$ 23	Excited					197 241.70	
$Br^{79}C^{12}N^{14}$	4- 141	24 $\leftarrow$ 23	Ground					197 721.69	.40
$Br^{79}C^{12}N^{14}$	4- 141	24 $\leftarrow$ 23	Excited					198 181.25	
$Br^{79}C^{12}N^{14}$	4- 141	24 $\leftarrow$ 23	Excited					198 368.79	
$HC^{12}O^{16}O^{16}H$	3- 71	9, 0, 9 $\leftarrow$ 8, 0, 8						198 755.7	.1
$N_2^{14}O^{16}$	4-1811	8 $\leftarrow$ 7	Ground					200 975.26	.40
$HC^{12}O^{16}O^{16}H$	3- 71	9, 2, 8 $\leftarrow$ 8, 2, 7						201 673.6	.1
$C^{12}H_3C^{12}N^{14}$	4- 811	11,10 $\leftarrow$ 10,10	Ground					201 967.02	.5
$C^{12}H_3C^{12}N^{14}$	4- 811	11, 9 $\leftarrow$ 10, 9	Ground					202 040.76	.5
$C^{12}H_3C^{12}N^{14}$	4- 811	11, 8 $\leftarrow$ 10, 8	Ground					202 106.80	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 7←10, 7	Ground					202 164.93	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 6←10, 6	Ground					202 215.87	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 5←10, 5	Ground					202 257.87	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 4←10, 4	Ground					202 293.78	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 3←10, 3	Ground					202 321.54	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 2←10, 2	Ground					202 340.10	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 1←10, 1	Ground					202 351.45	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 0←10, 0	Ground					202 355.61	.5
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 7, ← 8, 7,						202 409.6	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 8, ← 8, 8,						202 413.8	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 6, ← 8, 6,						202 418.2	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 5, 4← 8, 5, 3						202 449.9	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 5, 5← 8, 5, 4						202 449.9	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 4, 6← 8, 4, 5						202 527.3	.1
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 4, 5← 8, 4, 4						202 530.0	.1
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 8←10, 8	Excited					202 642.27	.5
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 3, 7← 8, 3, 6						202 654.0	.1
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11,10←10,10	Excited					202 655.71	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 7←10, 7	Excited					202 709.07	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 9←10, 9	Excited					202 721.62	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 6←10, 6	Excited					202 768.06	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 1←10, 1	Excited					202 769.94	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 8←10, 8	Excited					202 779.70	.5
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 3, 6← 8, 3, 5						202 815.4	.1
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 5←10, 5	Excited					202 819.06	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 7←10, 7	Excited					202 830.05	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 4←10, 4	Excited					202 862.38	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 6←10, 6	Excited					202 872.91	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 3←10, 3	Excited					202 897.68	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 5←10, 5	Excited					202 907.98	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 2←10, 2	Excited					202 924.94	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 4←10, 4	Excited					202 935.67	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 1←10, 1	Excited					202 943.39	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 0←10, 0	Excited					202 950.97	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 3←10, 3	Excited					202 956.31	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 2←10, 2	Excited					202 972.63	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 1←10, 1	Excited					203 161.23	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 300.	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 303.5	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 409.5	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 413.7	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 441.2	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 449.5	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 485.0	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 514.6	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 517.7	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 529.3	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 533.9	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 3←10, 3	Excited					203 544.4	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 553.8	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 2←10, 2	Excited					203 563.1	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 564.4	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 1←10, 1	Excited					203 572.6	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 0←10, 0	Excited					203 574.3	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, ←10,	Excited					203 583.3	.5
C ¹² H ₃ F ¹⁹	4- 461	4, 3← 3, 3	Ground					204 241.71	.40
C ¹² H ₃ F ¹⁹	4- 461	4, 2← 3, 2	Ground					204 259.48	.40
C ¹² H ₃ F ¹⁹	4- 461	4, 1← 3, 1	Ground					204 270.09	.40
C ¹² H ₃ F ¹⁹	4- 461	4, 0← 3, 0	Ground					204 273.69	.40
HC ¹² O ¹⁶ O ¹⁶ H	3- 71	9, 2, 7← 8, 2, 6						205 127.9	.1
HN ₂ ¹⁴ N ¹⁵	4-1703	9, 1, 9← 8, 1, 8	Ground					206 327.94	.15
HN ₂ ¹⁵ N ¹⁴	4-1704	9, 1, 9← 8, 1, 8	Ground					206 750.75	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	9, 3, 7← 8, 3, 6	Ground					207 287.36	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	9, 3, 6← 8, 3, 5	Ground					207 287.36	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	9, 2, 8← 8, 2, 7	Ground					207 352.88	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	9, 2, 7← 8, 2, 6	Ground					207 361.21	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	9, 0, 9← 8, 0, 8	Ground					207 400.07	.15
HN ₂ ¹⁵ N ¹⁴	4-1704	9, 3, 6← 8, 3, 5	Ground					207 721.44	.15
HN ₂ ¹⁵ N ¹⁴	4-1704	9, 3, 7← 8, 3, 6	Ground					207 721.44	.15
HN ₂ ¹⁵ N ¹⁴	4-1704	9, 2, 8← 8, 2, 7	Ground					207 788.33	.15
HN ₂ ¹⁵ N ¹⁴	4-1704	9, 2, 7← 8, 2, 6	Ground					207 797.01	.15
HN ₂ ¹⁵ N ¹⁴	4-1704	9, 0, 9← 8, 0, 8	Ground					207 835.99	.15
HN ₂ ¹⁴ N ¹⁵	4-1703	9, 1, 8← 8, 1, 7	Ground					208 457.72	.15
HN ₂ ¹⁵ N ¹⁴	4-1704	9, 1, 8← 8, 1, 7	Ground					208 907.54	.15
ClF ³⁷ C ¹² N ¹⁴	4- 173	18←17	Ground					210 463.24	.45
HC ¹² HO ¹⁶	4- 381	3, 1, 3← 2, 1, 2	Ground					211 210.6	1.1
HN ₃ ¹⁴	4-1701	9, 1, 9← 8, 1, 8	Ground					213 173.13	.15
HN ₃ ¹⁴	4-1701	9, 6, 4← 8, 6, 3	Ground					213 788.90	.15
HN ₃ ¹⁴	4-1701	9, 6, 3← 8, 6, 2	Ground					213 788.90	.15
HN ₃ ¹⁴	4-1701	9, 5, 4← 8, 5, 3	Ground					213 959.72	.15
HN ₃ ¹⁴	4-1701	9, 5, 5← 8, 5, 4	Ground					213 959.72	.15
HN ₃ ¹⁴	4-1701	9, 4, 5← 8, 4, 4	Ground					214 095.93	.15
HN ₃ ¹⁴	4-1701	9, 4, 6← 8, 4, 5	Ground					214 095.93	.15
HN ₃ ¹⁴	4-1701	9, 3, 6← 8, 3, 5	Ground					214 198.59	.15
HN ₃ ¹⁴	4-1701	9, 3, 7← 8, 3, 6	Ground					214 198.59	.15
HN ₃ ¹⁴	4-1701	9, 2, 8← 8, 2, 7	Ground					214 267.72	.15
HN ₃ ¹⁴	4-1701	9, 2, 7← 8, 2, 6	Ground					214 277.22	.15
HN ₃ ¹⁴	4-1701	9, 0, 9← 8, 0, 8	Ground					214 316.89	.15
ClF ³⁵ C ¹² N ¹⁴	4- 171	18←17	Ground					214 911.20	.45
ClF ³⁵ C ¹² N ¹⁴	4- 171	18←17	Excited					215 364.77	

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine F' ₁ F' F' ₁ F				Frequency MHz	Acc. ±MHz
HN ₃ ¹⁴	4-1701	9, 1, 8← 8, 1, 7	Ground					215 446.80	.15
O ¹⁶ C ¹² Se ⁸²	4- 548	27←26	Ground					215 627.18	.45
Cl ³⁵ C ¹² N ¹⁴	4- 171	18←17	Excited					215 633.04	
Cl ³⁷ C ¹² N ¹⁴	4- 173	18←17	Excited					215 769.51	
Cl ³⁷ C ¹² N ¹⁴	4- 173	18←17	Excited					216 027.44	
H ₂ S ³²	4-1724	2, 2, 0← 2, 1, 1	Ground					216 710.42	.45
O ¹⁶ C ¹² Se ⁸⁰	4- 547	27←26	Ground					216 900.38	.45
O ¹⁶ C ¹² Se ⁸⁰	4- 547	27←26	Excited					217 186.90	
DC ¹² N ¹⁴	4- 292	3← 2	Ground					217 238.40	.45
O ¹⁶ C ¹² Se ⁸⁰	4- 547	27←26	Excited					217 358.18	
HC ¹² HO ¹⁶	4- 381	3, 0, 3← 2, 0, 2	Ground					218 221.6	1.1
O ¹⁶ C ¹² Se ⁷⁸	4- 545	27←26	Ground					218 236.97	.45
HC ¹² HO ¹⁶	4- 381	3, 2, 2← 2, 2, 1	Ground					218 475.1	1.1
HC ¹² HO ¹⁶	4- 381	3, 2, 0← 2, 2, 0	Ground					218 759.4	1.1
O ¹⁶ C ¹² S ³²	4- 521	18←17	Ground					218 903.27	.45
O ¹⁶ C ¹² Se ⁷⁷	4- 544	27←26	Ground					218 929.21	.45
O ¹⁶ C ¹² Se ⁷⁶	4- 543	27←26	Ground					219 641.79	.45
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 9←11, 9	Ground					220 403.96	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 8←11, 8	Ground					220 476.04	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 7←11, 7	Ground					220 539.30	.5
C ¹² H C ¹² N ¹⁴	4- 811	12, 6←11, 6	Ground					220 594.50	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 5←11, 5	Ground					220 641.12	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 4←11, 4	Ground					220 679.32	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 3←11, 3	Ground					220 709.08	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 2←11, 2	Ground					220 730.27	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 1←11, 1	Ground					220 742.99	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 0←11, 0	Ground					220 747.24	.5
Br ⁸¹ C ¹² N ¹⁴	4- 142	27←26	Ground					221 158.86	.45
TCI ³⁷	1-	1← 0	Ground	3/2		3/2		221 184.82	.4
TCI ³⁷	1-	1← 0	Ground	5/2		3/2		221 198.00	.4
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 1←11, 1	Excited					221 200.23	.5
TCI ³⁷	1-	1← 0	Ground	1/2		3/2		221 208.69	.4
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 5←11, 5	Excited					221 252.93	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 7←11, 7	Excited					221 265.54	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 4←11, 4	Excited					221 299.88	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 6←11, 6	Excited					221 311.95	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 3←11, 3	Excited					221 338.22	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 5←11, 5	Excited					221 350.37	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 2←11, 2	Excited					221 367.67	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 4←11, 4	Excited					221 380.74	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 1←11, 1	Excited					221 387.30	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 0←11, 0	Excited					221 394.15	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 3←11, 3	Excited					221 403.82	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 2←11, 2	Excited					221 422.37	.5
C ¹² H ₃ C ¹² N ¹⁴	4- 811	12, 1←11, 1	Excited					221 625.91	.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
Br ⁸¹ C ¹² N ¹⁴	4- 142	27←26	Excited					221 673.17	
Br ⁸¹ C ¹² N ¹⁴	4- 142	27←26	Excited					221 881.84	
C ¹² H ₃ C ¹² :C ¹² H	4-1041	13, 7←12, 7						221 959.38	.45
C ¹² H ₃ C ¹² :C ¹² H	4-1041	13, 6←12, 6						222 014.44	.45
C ¹² H ₃ C ¹² :C ¹² H	4-1041	13, 5←12, 5						222 060.95	.45
C ¹² H ₃ C ¹² :C ¹² H	4-1041	13, 4←12, 4						222 099.05	.45
C ¹² H ₃ C ¹² :C ¹² H	4-1041	13, 3←12, 3						222 128.61	.45
TCl ³⁵	1-	1← 0	Ground	3/2		3/2		222 130.32	.4
TCl ³⁵	1-	1← 0	Ground	5/2		3/2		222 147.23	.4
C ¹² H ₃ C ¹² :C ¹² H	4-1041	13, 2←12, 2						222 149.80	.45
Br ⁷⁹ C ¹² N ¹⁴	4- 141	27←26	Excited					222 150.44	
TCl ³⁵	1-	1← 0	Ground	1/2		3/2		222 160.50	.4
C ¹² H ₃ C ¹² :C ¹² H	4-1041	13, 1←12, 1						222 162.46	.45
C ¹² H ₃ C ¹² :C ¹² H	4-1041	13, 0←12, 0						222 166.71	.45
Br ⁷⁹ C ¹² N ¹⁴	4- 141	27←26	Ground					222 422.34	.45
Br ⁷⁹ C ¹² N ¹⁴	4- 141	27←26	Excited					222 939.11	
As ⁷⁵ H ₃	4- 31	1, 0← 0, 0	Ground	3/2		3/2		224 895.91	.5
As ⁷⁵ H ₃	4- 31	1, 0← 0, 0	Ground	5/2		3/2		224 936.78	.5
As ⁷⁵ H ₃	4- 31	1, 0← 0, 0	Ground	1/2		3/2		224 967.56	.5
HC ¹² HO ¹⁶	4- 381	3, 1, 2← 2, 1, 1	Ground					225 698.2	1.1
N ₂ ¹⁴ O ¹⁶	4-1811	9← 8	Ground					226 093.81	.45
C ¹² H ₃ C ¹² N ¹⁴	4- 811	11, 6←10, 6	Excited					230 461.2	.5
C ¹² O ¹⁶	1-	2← 1	Ground					230 537.974	.030
Cl ³⁷ C ¹² N ¹⁴	4- 173	20←19	Ground					233 838.30	.50
Cl ³⁵ C ¹² N ¹⁴	4- 171	20←19	Ground					238 780.22	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,24←25,24	Ground					238 791.31	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,23←25,23	Ground					238 794.51	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,22←25,22	Ground					238 797.54	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,21←25,21	Ground					238 800.41	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,20←25,20	Ground					238 803.16	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,18←25,18	Ground					238 808.33	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,17←25,17	Ground					238 810.71	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,16←25,16	Ground					238 812.98	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,15←25,15	Ground					238 815.05	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,14←25,14	Ground					238 816.96	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,13←25,13	Ground					238 818.73	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,12←25,12	Ground					238 820.35	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,11←25,11	Ground					238 821.94	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26,10←25,10	Ground					238 823.32	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 9←25, 9	Ground					238 824.54	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 8←25, 8	Ground					238 825.78	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 7←25, 7	Ground					238 826.80	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 6←25, 6	Ground					238 827.58	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 5←25, 5	Ground					238 828.39	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 4←25, 4	Ground					238 828.98	.50

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 3 $\leftarrow$ 25, 3	Ground					238 829.43	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 2 $\leftarrow$ 25, 2	Ground					238 829.94	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 1 $\leftarrow$ 25, 1	Ground					238 829.94	.50
P ³¹ O ¹⁶ F ₃ ¹⁹	4-1671	26, 0 $\leftarrow$ 25, 0	Ground					238 829.94	.50
C ¹² H ₃ C ¹² :C ¹² H	4-1041	14, 6 $\leftarrow$ 13, 6						239 087.81	.50
C ¹² H ₃ C ¹² :C ¹² H	4-1041	14, 5 $\leftarrow$ 13, 5						239 138.04	.50
C ¹² H ₃ C ¹² :C ¹² H	4-1041	14, 4 $\leftarrow$ 13, 4						239 178.97	.50
C ¹² H ₃ C ¹² :C ¹² H	4-1041	14, 3 $\leftarrow$ 13, 3						239 210.93	.50
C ¹² H ₃ C ¹² :C ¹² H	4-1041	14, 2 $\leftarrow$ 13, 2						239 233.92	.50
C ¹² H ₃ C ¹² :C ¹² H	4-1041	14, 1 $\leftarrow$ 13, 1						239 247.62	.50
C ¹² H ₃ C ¹² :C ¹² H	4-1041	14, 0 $\leftarrow$ 13, 0						239 252.14	.50
Cl ³⁵ C ¹² N ¹⁴	4- 171	20 $\leftarrow$ 19	Excited					239 283.85	
O ¹⁶ C ¹² Se ⁸²	4- 548	30 $\leftarrow$ 29	Ground					239 572.08	.50
Cl ³⁵ C ¹² N ¹⁴	4- 171	20 $\leftarrow$ 19	Excited					239 582.25	
O ¹⁶ C ¹² Se ⁸⁰	4- 547	30 $\leftarrow$ 29	Ground					240 986.62	.50
HDO ¹⁶	4-1712	2, 1, 1 $\leftarrow$ 2, 1, 2	Ground					241 561.3	
N ¹⁵ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		2		1	241 715.40	0.50
N ¹⁵ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		3		2	241 723.79	0.50
N ¹⁵ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		2		1	242 046.03	0.50
N ¹⁵ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		3		2	242 060.35	0.50
O ¹⁶ C ¹² Se ⁷⁸	4- 545	30 $\leftarrow$ 29	Ground					242 471.47	.50
O ¹⁶ C ¹² S ³²	4- 521	20 $\leftarrow$ 19	Ground					243 218.09	.50
O ¹⁶ C ¹² Se ⁷⁶	4- 543	30 $\leftarrow$ 29	Ground					244 032.33	.50
Br ⁸¹ C ¹² N ¹⁴	4- 142	30 $\leftarrow$ 29	Ground					245 714.32	.50
Br ⁷⁹ C ¹² N ¹⁴	4- 141	30 $\leftarrow$ 29	Ground					247 117.75	.50
Br ⁷⁹ C ¹² N ¹⁴	4- 141	30 $\leftarrow$ 29	Excited					247 691.48	
Br ⁷⁹ C ¹² N ¹⁴	4- 141	30 $\leftarrow$ 29	Excited					247 925.95	
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		7/2		5/2	250 435.60	.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		5/2		3/2	250 439.20	.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		3/2		1/2	250 447.16	0.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		3/2		3/2	250 474.02	0.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		5/2		5/2	250 481.52	0.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		5/2		5/2	250 707.12	0.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		3/2		3/2	250 752.61	0.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		7/2		5/2	250 794.99	0.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		5/2		3/2	250 814.64	0.50
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground		3/2		1/2	250 816.24	0.50
N ₂ ¹⁴ O ¹⁶	4-1811	10 $\leftarrow$ 9	Ground					251 211.33	.50
DBr ⁸¹	1-	1 $\leftarrow$ 0	Ground		1/2		3/2	254 437.641	.050
DBr ⁸¹	1-	1 $\leftarrow$ 0	Ground		5/2		3/2	254 526.984	.050
DBr ⁷⁹	1-	1 $\leftarrow$ 0	Ground		1/2		3/2	254 571.661	.050
DBr ⁸¹	1-	1 $\leftarrow$ 0	Ground		3/2		3/2	254 637.448	.050
DBr ⁷⁹	1-	1 $\leftarrow$ 0	Ground		5/2		3/2	254 678.380	.050
DBr ⁷⁹	1-	1 $\leftarrow$ 0	Ground		3/2		3/2	254 810.634	.050
Cl ³⁷ C ¹² N ¹⁴	4- 173	22 $\leftarrow$ 21	Ground					257 210.28	.55

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. $\pm$ MHz
				F' ₁	F'	F ₁	F		
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground	7/2		5/2		257 822.06	0.3
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground	7/2		5/2		257 825.02	0.3
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground	5/2		3/2		257 852.87	0.3
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground	5/2		3/2		257 855.36	0.3
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground	3/2		1/2		257 867.67	0.3
N ¹⁴ O ¹⁶	1-	5/2 $\leftarrow$ 3/2	Ground	3/2		1/2		257 870.35	0.3
Cl ³⁵ C ¹² N ¹⁴	4- 171	22 $\leftarrow$ 21	Ground					262 645.82	.55
O ¹⁶ C ¹² Se ⁸²	4- 548	33 $\leftarrow$ 32	Ground					263 512.90	.55
O ¹⁶ C ¹² Se ⁸⁰	4- 547	33 $\leftarrow$ 32	Ground					265 068.60	.55
HC ¹² N ¹⁴	4- 291	3 $\leftarrow$ 2	Ground					265 886.18	.55
O ¹⁶ C ¹² Se ⁷⁸	4- 545	33 $\leftarrow$ 32	Ground					266 701.93	.55
P ³¹ H ₃	4-1781	1, 0 $\leftarrow$ 0, 0	Ground					266 944.69	.55
O ¹⁶ C ¹² S ³²	4- 521	22 $\leftarrow$ 21	Ground					267 529.56	.55
Br ⁸¹ C ¹² N ¹⁴	4- 142	33 $\leftarrow$ 32	Ground					270 263.95	.55
Br ⁷⁹ C ¹² N ¹⁴	4- 141	33 $\leftarrow$ 32	Ground					271 807.59	.55
N ₂ ¹⁴ O ¹⁶	4-1811	11 $\leftarrow$ 10	Ground					276 327.50	.55
P ³¹ D ₃	4-1784	2, 0 $\leftarrow$ 1, 0	Ground					277 857.08	.60
Cl ³⁷ C ¹² N ¹⁴	4- 173	24 $\leftarrow$ 23	Ground					280 578.92	.60
Cl ³⁵ C ¹² N ¹⁴	4- 171	24 $\leftarrow$ 23	Ground					286 507.95	.60
DC ¹² N ¹⁴	4- 292	4 $\leftarrow$ 3	Ground					286 644.67	.60
O ¹⁶ C ¹² Se ⁸⁰	4- 547	36 $\leftarrow$ 35	Ground					289 145.50	.60
O ¹⁶ C ¹² S ³²	4- 521	24 $\leftarrow$ 23	Ground					291 839.22	.60
Br ⁸¹ C ¹² N ¹⁴	4- 142	36 $\leftarrow$ 35	Ground					294 807.52	.60
Br ⁷⁹ C ¹² N ¹⁴	4- 141	36 $\leftarrow$ 35	Ground					296 490.86	.60
Cl ₂ O ¹⁶	4-1484	9, 0, 9 $\leftarrow$ 8, 1, 8	Ground					299 984.05	
N ₂ ¹⁴ O ¹⁶	4-1811	12 $\leftarrow$ 11	Ground					301 442.38	.60
Cl ³⁷ C ¹² N ¹⁴	4- 173	26 $\leftarrow$ 25	Ground					303 943.87	.65
N ¹⁴ D ₃	4-1775	1, 0 $\leftarrow$ 0, 0	Ground	1			1	306 735.0	
N ¹⁴ D ₃	4-1775	1, 0 $\leftarrow$ 0, 0	Ground	2			1	306 735.0	
N ¹⁴ D ₃	4-1775	1, 0 $\leftarrow$ 0, 0	Ground	0			1	306 735.0	
N ¹⁴ D ₃	4-1775	1, 0 $\leftarrow$ 0, 0	Ground	1			1	309 908.24	
N ¹⁴ D ₃	4-1775	1, 0 $\leftarrow$ 0, 0	Ground	2			1	309 909.54	
N ¹⁴ D ₃	4-1775	1, 0 $\leftarrow$ 0, 0	Ground	0			1	309 911.41	
Cl ³⁵ C ¹² N ¹⁴	4- 171	26 $\leftarrow$ 25	Ground					310 365.90	.65
O ¹⁶ C ¹² Se ⁸⁰	4- 547	39 $\leftarrow$ 38	Ground					313 217.57	.65
O ¹⁶ C ¹² S ³²	4- 521	26 $\leftarrow$ 25	Ground					316 144.7	1.0
Br ⁸¹ C ¹² N ¹⁴	4- 142	39 $\leftarrow$ 38	Ground					319 345.52	1.0
Br ⁷⁹ C ¹² N ¹⁴	4- 141	39 $\leftarrow$ 38	Ground					321 167.1	.65
DCI ³⁷	1-	1 $\leftarrow$ 0	Ground	3/2		3/2		322 339.09	.13
DCI ³⁷	1-	1 $\leftarrow$ 0	Ground	5/2		3/2		322 352.33	.13
DCI ³⁷	1-	1 $\leftarrow$ 0	Ground	1/2		3/2		322 362.94	.13
DCI ³⁵	1-	1 $\leftarrow$ 0	Ground	3/2		3/2		323 282.28	.13
DCI ³⁵	1-	1 $\leftarrow$ 0	Ground	5/2		3/2		323 299.17	.13
DCI ³⁵	1-	1 $\leftarrow$ 0	Ground	1/2		3/2		323 312.52	.13
Cl ³⁵ C ¹² N ¹⁴	4- 171	28 $\leftarrow$ 27	Ground					334 219.5	1.5

Isotopic Species	Vol.-Id. Nos.	Rotational Quantum Nos.	Vib. State	Hyperfine				Frequency MHz	Acc. ±MHz
				F' ₁	F'	F ₁	F		
O ¹⁶ C ¹² S ³²	4- 521	28←27	Ground					340 449.2	1.0
Br ⁸¹ C ¹² N ¹⁴	4- 142	42←41	Ground					343 873.0	1.5
C ¹² O ¹⁶	1-	3← 2	Ground					345 795.900	.090
Br ⁷⁹ C ¹² N ¹⁴	4- 141	42←41	Ground					345 837.0	1.0
O ¹⁶ C ¹² S ³²	4- 521	30←29	Ground					364 747.5	1.5
HI ¹²⁷	1-	1← 0	Ground		5/2		5/2	385 000.11	.7
HI ¹²⁷	1-	1← 0	Ground		7/2		5/2	385 385.52	.7
HI ¹²⁷	1-	1← 0	Ground		3/2		5/2	385 548.80	.7
O ¹⁶ C ¹² S ³²	4- 521	32←31	Ground					389 041.	2.0
Br ⁸¹ C ¹² N ¹⁴	4- 142	48←47	Ground					392 907.0	.9
Br ⁸¹ C ¹² N ¹⁴	4- 142	52←51	Ground					425 575.9	.9
Br ⁸¹ C ¹² N ¹⁴	4- 142	56←55	Ground					458 226.2	.9
O ¹⁶ C ¹² S ³²	4- 521	36←35	Ground					486 184.2	
O ¹⁶ C ¹² S ³²	4- 521	42←41	Ground					510 457.3	

Index

Vol.-Id. No.	Formula	Name
1-	BrCl	Bromine monochloride
	BrF	Bromine monofluoride
	CS	Carbon monosulfide
	CO	Carbon monoxide
	CsBr	Cesium bromide
	CsCl	Cesium chloride
	CsF	Cesium fluoride
	CsI	Cesium iodide
	FCI	Fluorine chloride
	GaBr	Gallium monobromide
	GaCl	Gallium monochloride
	GaI	Gallium monoiodide
	HBr	Hydrogen bromide
	HCl	Hydrogen chloride
	HI	Hydrogen iodide
	HO	Hydroxyl radical
	InBr	Indium bromide
	InCl	Indium chloride
	InI	Indium iodide
	ICI	Iodine monochloride
	LiBr	Lithium bromide
	LiI	Lithium iodide
	NO	Nitric oxide
	O ₂	Oxygen
	KBr	Potassium bromide
	KCl	Potassium chloride
	KI	Potassium iodide
	RbBr	Rubidium bromide
	RbCl	Rubidium chloride
	RbI	Rubidium iodide
	NaBr	Sodium bromide
	NaCl	Sodium chloride
	NaI	Sodium iodide
	TlBr	Thallium bromide
	TlCl	Thallium chloride
	TlF	Thallium fluoride
	TlI	Thallium iodide
3- 10	F ₂ O ₂	Dioxygen dituoride
20	F ₂ NNF ₂	Tetrafluorohydrazine
30	HNO ₃	Nitric acid
40	HOOH	Hydrogen peroxide
50	H ₂ NNH ₂	Hydrazine
60	CF ₃ SF ₅	Trifluoromethyl sulfur pentafluoride
70	HCOOH	Formic acid
80	CH ₃ AsF ₂	Methyldifluoroarsine
90	CH ₃ BF ₂	Methyldifluoroborane
100	CH ₃ GeCl ₃	Methyltrichlorogermane
110	CH ₃ SiCl ₃	Methyltrichlorosilane
120	CH ₃ GeF ₃	Methyltrifluorogermane

Vol.-Id. No.	Formula	Name
3- 130	CH_3SiF_3	Methyltrifluorosilane
140	CH_2NOH	Formaldoxime
150	HCONH_2	Formamide
170	CH_3NO_2	Nitromethane
180	CH_3ONO_2	Methyl nitrate
190	CH_3SiHF_2	Methyldifluorosilane
210	CH_3OH	Methanol
220	CH_3SH	Methanethiol
230	$\text{CH}_2\text{ClSiH}_3$	Chloromethylsilane
240	$\text{CH}_3\text{SiH}_2\text{F}$	Methylmonofluorosilane
260	CH_3NH_2	Methylamine
270	CH_3PH_2	Methylphosphine
280	CH_3GeH_3	Methyl germane
310	CH_3SiH_3	Methylsilane
340	CH_3SnH_3	Methyltin
350	CH_3COBr	Acetyl bromide
360	CH_3COCl	Acetyl chloride
380	CH_3CCl_3	1,1,1-trichloroethane
390	CH_3COF	Acetyl fluoride
410	CH_3CF_3	1,1,1-trifluoroethane
420	CH_3NCS	Methyl isothiocyanate
430	CH_3SCN	Methyl thiocyanate
440	$\text{CH}_2\text{FCH}_2\text{Cl}$	1-chloro-2-fluoroethane
450	$\text{CH}_2\text{ClCH}_2\text{Cl}$	1,2-dichloroethane
460	CH_3CHF_2	1,1-difluoroethane
470	CH_3CHO	Acetaldehyde
490	CH_3COOH	Acetic acid
500	HCOOCH_3	Methyl formate
520	$\text{CH}_3\text{CH}_2\text{Br}$	Bromoethane
540	$\text{CH}_3\text{CH}_2\text{Cl}$	Chloroethane
550	$\text{CH}_3\text{CH}_2\text{F}$	Fluoroethane
570	$\text{CH}_3\text{CH}_2\text{I}$	Iodoethane
580	$\text{CH}_3\text{CH}_2\text{OH}$	Ethanol
590	$(\text{CH}_3)_2\text{O}$	Methoxymethane
600	$(\text{CH}_3)_2\text{S}$	Dimethyl sulfide
610	$\text{CH}_2\text{:CHSiH}_3$	Vinyl silane
630	$\text{C}_2\text{H}_5\text{NH}_2$	Ethylamine
640	$(\text{CH}_3)_2\text{SiH}_2$	Dimethylsilane
650	$\text{CH}_3\text{CH}_2\text{SiH}_3$	Ethylsilane
660	$\text{CF}_3\text{COOH} \cdot \text{HCOOH}$	Trifluoroacetic acid · formic acid complex
670	CH_3COCN	Pyruvonitrile
680	$\text{CH}_3\text{CH:CO}$	Methyl ketene
690	$\text{CH}_2\text{:CHCHO}$	<i>s-trans</i> -acrolein
700	<i>c</i> - $\text{CH}_3\text{CH:CHF}$	<i>cis</i> -1-fluoropropene
710	$\text{CH}_3\text{CH:CHF}$	<i>trans</i> -fluoropropene
720	$\text{CH}_3\text{CF:CH}_2$	2-fluoropropene
730	$\text{CH}_3\text{CH}_2\text{CN}$	Propionitrile
740	$\text{CH}_3\text{CH:CH}_2$	Propene
750	$(\text{CH}_3)_2\text{CO}$	Acetone
760	$\text{CH}_3\text{C}^*\text{HOC}^*\text{H}_2$	1,2-epoxypropane
770	$\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$	1-chloropropane
780	$\text{CH}_3\text{CH}_2\text{CH}_3$	Propane
790	$(\text{CH}_3)_3\text{As}$	Trimethylarsine
800	$\text{F}_3\text{B} \cdot \text{N}(\text{CH}_3)_3$	Trifluoroborane · trimethylamine
810	$(\text{CH}_3)_3\text{SiBr}$	Trimethylbromosilane
820	$(\text{CH}_3)_3\text{SiCl}$	Trimethylchlorosilane
830	$(\text{CH}_3)_3\text{SiF}$	Trimethylfluorosilane

Vol.-Id. No.	Formula	Name
3- 840	$(\text{CH}_3)_3\text{SiI}$	Trimethyliodosilane
850	$(\text{CH}_3)_3\text{N}$	Trimethylamine
860	$(\text{CH}_3)_3\text{P}$	Trimethylphosphine
870	$(\text{CH}_3)_3\text{SiH}$	Trimethylsilane
890	$\text{CH}_3\text{C}:\text{CCF}_3$	1,1,1-trifluoro-2-butyne
900	$\text{CH}_3\text{C}:\text{CCH}_2\text{Cl}$	1-chloro-2-butyne
910	$\text{CH}_2:\text{CHCF}:\text{CH}_2$	2-fluoro-1,3-butadiene
920	$t\text{-CH}_3\text{CH}:\text{CHCN}$	<i>trans</i> -crotononitrile
930	$\text{CH}_3\text{CH}:\text{C}:\text{CH}_2$	1,2-butadiene
940	$(\text{CH}_3)_2\text{C}:\text{CH}_2$	2-methylpropene
950	$\text{CH}_3\text{C}^*\text{HOC}^*\text{HCH}_3$	<i>cis</i> -2,3-epoxybutane
960	$(\text{CH}_3)_3\text{CBr}$	2-bromo-2-methylpropane
970	$(\text{CH}_3)_3\text{CCl}$	2-chloro-2-methylpropane
980	$(\text{CH}_3)_3\text{CF}$	2-fluoro-2-methylpropane
990	$(\text{CH}_3)_3\text{CI}$	2-iodo-2-methylpropane
1000	$(\text{CH}_3)_3\text{CH}$	2-methylpropane
1010	$\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$	Ethoxyethane
1020	$(\text{CH}_3)_3\text{CCN}$	2,2-dimethylpropanenitrile
1030	$(\text{CH}_3)_3\text{CNC}$	tert-butyl isocyanide
1040	$\text{C}_6\text{H}_5\text{NO}_2$	Nitrobenzene
1050	$\text{C}_6\text{H}_5\text{OH}$	Phenol
1060	$(\text{CH}_3)_3\text{CC}:\text{CCl}$	1-chloro-3,3-dimethyl-1-butyne
1070	$(\text{CH}_3)_3\text{CC}:\text{CH}$	3,3-dimethyl-1-butyne
1080	$(\text{CH}_3)_3\text{N} \cdot \text{B}(\text{CH}_3)_3$	Trimethylamine · trimethylborane
1090	$\text{C}_6\text{H}_5\text{C}:\text{CH}$	Ethynylbenzene
4- 10	AsCl_3	Arsenic trichloride
20	AsF_3	Arsenic trifluoride
30	AsH_3	Arsine
40	$\text{H}_2\text{BH}_2\text{BHBBr}$	Bromodiborane
50	B_5H_9	Pentaborane
70	BiCl_3	Bismuth trichloride
80	BrF_3	Bromine trifluoride
90	SiF_3Br	Bromotrifluorosilane
100	GeH_3Br	Bromogermane
110	SiH_3Br	Bromosilane
120	NOBr	Nitrosyl bromide
130	PBr_3	Phosphorus tribromide
140	BrCN	Cyanogen bromide
150	ClFCO	Chlorofluorocarbonyl
160	CF_3Cl	Chlorotrifluoromethane
170	ClCN	Cyanogen chloride
180	COCl_2	Phosgene
190	CCl_3F	Trichlorofluoromethane
200	FCN	Cyanogen fluoride
210	COF_2	Carbonyl fluoride
220	CF_3Br	Bromotrifluoromethane
230	CF_3I	Trifluoroiodomethane
240	CHBr_3	Tribromomethane
250	CHClF_2	Chlorodifluoromethane
260	CHCl_3	Trichloromethane
270	FCHO	Formyl fluoride
280	CHF_3	Trifluoromethane
290	HCN	Hydrocyanic acid
300	HNCO	Isocyanic acid
310	HNCS	Isothiocyanic acid
320	CH_2Br_2	Dibromomethane
330	CH_2ClF	Chlorofluoromethane

Vol.-Id. No.	Formula	Name
4- 340	CH ₂ Cl ₂	Dichloromethane
350	CH ₂ F ₂	Difluoromethane
360	H ₂ NCN	Cyanamide
370	H ₂ CNN	Diazomethane
380	HCHO	Formaldehyde
390	H ₃ BCO	Carbonyl borane
400	CH ₃ Br	Bromomethane
410	CH ₃ HgBr	Methyl mercuric bromide
420	CH ₃ Cl	Chloromethane
440	CH ₃ HgCl	Methyl mercuric chloride
460	CH ₃ F	Fluoromethane
470	CH ₃ HgI	Methyl mercuric iodide
480	CH ₃ I	Iodomethane
490	SiH ₃ NCS	Silyl isothiocyanate
500	H ₃ SiCN	Silyl cyanide
510	ICN	Cyanogen iodide
520	OCS	Carbonyl sulfide
540	OCSe	Carbonyl selenide
560	SCSe	Thiocarbonyl selenide
570	SCTe	Thiocarbonyl telluride
580	CCl ₃ CN	Trichloroacetonitrile
590	CF ₃ CN	Trifluoroacetonitrile
600	HC:CCl	Chloroacetylene
610	CHCl:CF ₂	1,1-difluoro-2-chloroethene
620	HC:CF	Fluoroacetylene
630	CH ₂ CFCl	1,1-chlorofluoroethene
640	CHF:CHCl	<i>cis</i> -1-chloro-2-fluoroethene
650	CH ₂ ClCN	Monochloroacetonitrile
660	H ₂ C:CCl ₂	1,1-dichloroethene
670	HCIC:CHCl	<i>cis</i> -1,2-dichloroethene
680	H ₂ C:CF ₂	1,1-difluoroethene
690	HFC:CHF	<i>cis</i> -1,2-difluoroethene
700	CH ₂ FCN	Monofluoroacetonitrile
710	H ₂ C:CO	Ketene
720	CH ₂ :CHBr	Bromoethene
760	H ₂ C:CHCl	Chloroethene
780	H ₂ C:CHF	Fluoroethene
800	H ₂ C:CHI	Iodoethene
810	CH ₃ CN	Acetonitrile
830	CH ₃ NC	Methyl isocyanide
840	H ₂ C*OC*H ₂	Ethylene oxide
850	C*H ₂ SC*H ₂	Ethylene sulfide
860	C*H ₂ NHC*H ₂	Ethylenimine
870	CF ₃ C:CH	3,3,3-trifluoro-1-propyne
880	HC:CCN	Propiolonitrile
900	CH ₂ (CN) ₂	Malononitrile
910	HC:CCHO	Propionaldehyde
930	HC*:CHOCOO*	Vinylene carbonate
940	H ₃ CC:CBr	1-bromopropyne
950	H ₂ BrCC:CH	3-bromopropyne
960	H ₂ C:C:CHCl	Chloroallene
970	CH ₃ C:CCl	1-chloropropyne
990	CH ₂ ClC:CH	3-chloropropyne
1000	H ₂ FCc:CH	3-fluoropropyne
1010	H ₃ CC:CI	1-iodopropyne
1020	CH ₂ :CHCN	Acrylonitrile

Vol.-Id. No.	Formula	Name
4-1030	C*H ₂ CH:C*H	Cyclopropene
1040	CH ₃ C:CH	Propyne
1060	C*H ₂ CH ₂ C*Cl ₂	1,1-dichlorocyclopropane
1070	O*CH ₂ CH ₂ C*O	β -propiolactone
1080	C*H ₂ CH ₂ C*HCl	1-chlorocyclopropane
1090	C*H ₂ CH ₂ CH ₂ O*	Trimethylene oxide
1100	O*CH ₂ OCH ₂ OC*H ₂	1,3,5-trioxane
1110	P(CN) ₃	Phosphorus tricyanide
1120	H ₃ CC:CCN	2-butyne nitrile
1130	HC:CCH:CH ₂	1-buten-3-yne
1140	C*HNCHCH:CHN*	Pyrimidine
1150	C*H:CHOCH:C*H	Furan
1160	S*HC:CHCH:C*H	Thiophene
1170	C*H ₂ CH ₂ C*HCN	Cyclopropanecarbonitrile
1180	C ₄ H ₅ N	Pyrrole
1190	H ₃ CC:CC:CH	Penta-1,3-diyne
1200	C*H:CHCH:CHN*H	Pyridine
1210	C ₅ H ₅ NNiO	Nickel cyclopentadienyl nitrosyl
1220	C ₅ H ₅ Tl	Cyclopentadienyl thallium
1230	C*H ₂ CH:CHCH:C*H	1,3-cyclopentadiene
1240	C*H ₂ CH ₂ CH ₂ CH ₂ C*O	Cyclopentanone
1250	C*HOCHCH ₂ CH ₂ C*H ₂	Cyclopentene oxide
1260	C ₆ H ₅ Br	Bromobenzene
1270	C ₆ H ₅ Cl	Chlorobenzene
1280	C ₆ H ₅ F	Fluorobenzene
1290	C ₆ H ₅ CN	Benzonitrile
1310	C ₇ H ₁₃ N	Quinuclidine
1320	C ₅ H ₅ Mn(CO) ₃	Cyclopentadienyl manganese tricarbonyl
1330	C ₈ H ₁₃ Br	1-bromo-bicyclo(2,2,2)-octane
1340	C ₈ H ₁₃ Cl	1-chloro-bicyclo(2,2,2)-octane
1350	C ₆ H ₆ Cr(CO) ₃	Benzene chromium tricarbonyl
1360	ClO ₃ F	Perchloryl fluoride
1370	ClF ₃	Chlorine trifluoride
1380	ClO ₂	Chlorine dioxide
1390	POF ₂ Cl	Phosphoryl difluorochloride
1400	GeF ₃ Cl	Chlorotrifluorogermane
1410	SiF ₃ Cl	Chlorotrifluorosilane
1420	SF ₅ Cl	Sulfur chloride pentafluoride
1430	GeH ₃ Cl	Chlorogermane
1440	SiH ₃ Cl	Chlorosilane
1450	NOCl	Nitrosyl chloride
1460	NO ₂ Cl	Nitryl chloride
1470	ReO ₃ Cl	Rhenium trioxychloride
1480	Cl ₂ O	Chlorine monoxide
1490	GeHCl ₃	Trichlorogermane
1500	SiHCl ₃	Trichlorosilane
1510	POCl ₃	Phosphoryl chloride
1520	PCl ₃	Phosphorus trichloride
1530	SPCl ₃	Thiophosphoryl chloride
1540	SbCl ₃	Antimony trichloride
1550	SiH ₃ F	Fluorosilane
1560	MnO ₃ F	Manganese trioxyfluoride
1570	NOF	Nitrosyl fluoride
1580	NO ₂ F	Nitryl fluoride
1590	ReO ₃ F	Rhenium trioxyfluoride
1600	SiH ₂ F ₂	Difluorosilane

Vol.-Id. No.	Formula	Name
4-1610	OF ₂	Oxygen difluoride
1620	SOF ₂	Thionyl fluoride
1630	SO ₂ F ₂	Sulfuryl fluoride
1640	SiF ₃ H	Trifluorosilane
1650	NF ₃	Nitrogen trifluoride
1660	NSF ₃	Trifluorosulfur nitride
1670	POF ₃	Phosphoryl fluoride
1680	PF ₃	Phosphorus trifluoride
1690	SPF ₃	Thiophosphoryl fluoride
1700	HN ₃	Hydrazoic acid
1710	H ₂ O	Water
1720	H ₂ S	Hydrogen sulfide
1740	H ₂ Se	Hydrogen selenide
1760	SiH ₃ I	Iodosilane
1770	NH ₃	Ammonia
1780	PH ₃	Phosphine
1790	SbH ₃	Stibine
1800	NO ₂	Nitrogen dioxide
1810	N ₂ O	Nitrous oxide
1820	S ₂ O	Disulfur monoxide
1830	SO ₂	Sulfur dioxide
1840	O ₃	Ozone

THE NATIONAL BUREAU OF STANDARDS

The National Bureau of Standards¹ provides measurement and technical information services essential to the efficiency and effectiveness of the work of the Nation's scientists and engineers. The Bureau serves also as a focal point in the Federal Government for assuring maximum application of the physical and engineering sciences to the advancement of technology in industry and commerce. To accomplish this mission, the Bureau is organized into three institutes covering broad program areas of research and services:

THE INSTITUTE FOR BASIC STANDARDS . . . provides the central basis within the United States for a complete and consistent system of physical measurements, coordinates that system with the measurement systems of other nations, and furnishes essential services leading to accurate and uniform physical measurements throughout the Nation's scientific community, industry, and commerce. This Institute comprises a series of divisions, each serving a classical subject matter area:

—Applied Mathematics—Electricity—Metrology—Mechanics—Heat—Atomic Physics—Physical Chemistry—Radiation Physics—Laboratory Astrophysics²—Radio Standards Laboratory,² which includes Radio Standards Physics and Radio Standards Engineering—Office of Standard Reference Data.

THE INSTITUTE FOR MATERIALS RESEARCH . . . conducts materials research and provides associated materials services including mainly reference materials and data on the properties of materials. Beyond its direct interest to the Nation's scientists and engineers, this Institute yields services which are essential to the advancement of technology in industry and commerce. This Institute is organized primarily by technical fields:

—Analytical Chemistry—Metallurgy—Reactor Radiations—Polymers—Inorganic Materials—Cryogenics²—Office of Standard Reference Materials.

THE INSTITUTE FOR APPLIED TECHNOLOGY . . . provides technical services to promote the use of available technology and to facilitate technological innovation in industry and government. The principal elements of this Institute are:

—Building Research—Electronic Instrumentation—Technical Analysis—Center for Computer Sciences and Technology—Textile and Apparel Technology Center—Office of Weights and Measures—Office of Engineering Standards Services—Office of Invention and Innovation—Office of Vehicle Systems Research—Clearinghouse for Federal Scientific and Technical Information³—Materials Evaluation Laboratory—NBS/GSA Testing Laboratory.

¹ Headquarters and Laboratories at Gaithersburg, Maryland, unless otherwise noted; mailing address Washington, D. C., 20234.

² Located at Boulder, Colorado, 80302.

³ Located at 5285 Port Royal Road, Springfield, Virginia 22151.

NBS TECHNICAL PUBLICATIONS

PERIODICALS

JOURNAL OF RESEARCH reports National Bureau of Standards research and development in physics, mathematics, chemistry, and engineering. Comprehensive scientific papers give complete details of the work, including laboratory data, experimental procedures, and theoretical and mathematical analyses. Illustrated with photographs, drawings, and charts.

Published in three sections, available separately:

● Physics and Chemistry

Papers of interest primarily to scientists working in these fields. This section covers a broad range of physical and chemical research, with major emphasis on standards of physical measurement, fundamental constants, and properties of matter. Issued six times a year. Annual subscription: Domestic, \$5.00; foreign, \$6.00*.

● Mathematical Sciences

Studies and compilations designed mainly for the mathematician and theoretical physicist. Topics in mathematical statistics, theory of experiment design, numerical analysis, theoretical physics and chemistry, logical design and programming of computers and computer systems. Short numerical tables. Issued quarterly. Annual subscription: Domestic, \$2.25; foreign, \$2.75*.

● Engineering and Instrumentation

Reporting results of interest chiefly to the engineer and the applied scientist. This section includes many of the new developments in instrumentation resulting from the Bureau's work in physical measurement, data processing, and development of test methods. It will also cover some of the work in acoustics, applied mechanics, building research, and cryogenic engineering. Issued quarterly. Annual subscription: Domestic, \$2.75; foreign, \$3.50*.

TECHNICAL NEWS BULLETIN

The best single source of information concerning the Bureau's research, developmental, cooperative and publication activities, this monthly publication is designed for the industry-oriented individual whose daily work involves intimate contact with science and technology—for *engineers, chemists, physicists, research managers, product-development managers, and company executives*. Annual subscription: Domestic, \$1.50; foreign, \$2.25*.

*Difference in price is due to extra cost of foreign mailing.

NONPERIODICALS

Applied Mathematics Series. Mathematical tables, manuals, and studies.

Building Science Series. Research results, test methods, and performance criteria of building materials, components, systems, and structures.

Handbooks. Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications. Proceedings of NBS conferences, bibliographies, annual reports, wall charts, pamphlets, etc.

Monographs. Major contributions to the technical literature on various subjects related to the Bureau's scientific and technical activities.

National Standard Reference Data Series. NSRDS provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated.

Product Standards. Provide requirements for sizes, types, quality and methods for testing various industrial products. These standards are developed cooperatively with interested Government and industry groups and provide the basis for common understanding of product characteristics for both buyers and sellers. Their use is voluntary.

Technical Notes. This series consists of communications and reports (covering both other agency and NBS-sponsored work) of limited or transitory interest.

CLEARINGHOUSE

The Clearinghouse for Federal Scientific and Technical Information, operated by NBS, supplies unclassified information related to Government-generated science and technology in defense, space, atomic energy, and other national programs. For further information on Clearinghouse services, write:

Clearinghouse
U.S. Department of Commerce
Springfield, Virginia 22151

Order NBS publications from:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402





